

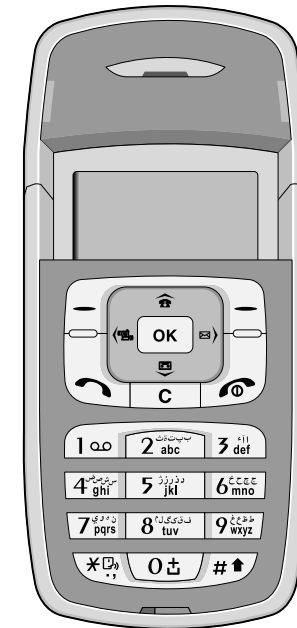


# Service Manual

## F7100



Model : F7100



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# 1. INTRODUCTION

## 1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

## 1.2 Regulatory Information

### A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that result from such unauthorized use.

### B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

### C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

### D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

### E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.



## 1. INTRODUCTION

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### F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

### G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

### H. Electrostatic Sensitive Devices

#### ATTENTION

**Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the  sign. Following information is ESD handling:**

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

## 1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current – Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milliwatt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIO	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode

OPLL	Offset Phase Locked Loop
PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Paeudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

## 2. PERFORMANCE

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## 2.PERFORMANCE

### 2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-ion,820mAh Size : (open) 121.2 X 45.5 X 21mm (close) 97 X 45.5 X 21mm Weight : 91g	
Charging Time	3Hours	
Display	128X160 pixel 65K STN LCD	
ANT	Internal	
Ear Phone Jack	Yes	
PC synchronization	Yes	
Speech Coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recording	Yes	
C-mike	Yes	
Receiver	Yes	
Travel Adaptor	Yes	
Option	Data Kit	

## 2.2 Technical Specification

Item	Description	Specification																																																						
1	Frequency Band	<b>GSM</b> <ul style="list-style-type: none"><li>• TX: <math>890 + n \times 0.2</math> MHz</li><li>• RX: <math>935 + n \times 0.2</math> MHz (<math>n = 1 \sim 124</math>)</li></ul> <b>EGSM</b> <ul style="list-style-type: none"><li>• TX: <math>890 + (n - 1024) \times 0.2</math> MHz</li><li>• RX: <math>935 + (n - 1024) \times 0.2</math> MHz (<math>n = 975 \sim 1024</math>)</li></ul> <b>DCS</b> <ul style="list-style-type: none"><li>• TX: <math>1710 + (n - 512) \times 0.2</math> MHz</li><li>• Rx: <math>1805 + (n - 512) \times 0.2</math> MHz (<math>n = 512 \sim 885</math>)</li></ul>																																																						
2	Phase Error	RMS < 5 degrees Peak < 20 degrees																																																						
3	Frequency Error	< 0.1 ppm																																																						
4	Power Level	GSM, EGSM																																																						
		<table><tr><th>Level</th><th>Power</th><th>Toler.</th><th>Level</th><th>Power</th><th>Toler.</th></tr><tr><td>5</td><td>33 dBm</td><td><math>\pm 2</math>dB</td><td>13</td><td>17 dBm</td><td><math>\pm 3</math>dB</td></tr><tr><td>6</td><td>31 dBm</td><td><math>\pm 3</math>dB</td><td>14</td><td>15 dBm</td><td><math>\pm 3</math>dB</td></tr><tr><td>7</td><td>29 dBm</td><td><math>\pm 3</math>dB</td><td>15</td><td>13 dBm</td><td><math>\pm 3</math>dB</td></tr><tr><td>8</td><td>27 dBm</td><td><math>\pm 3</math>dB</td><td>16</td><td>11 dBm</td><td><math>\pm 5</math>dB</td></tr><tr><td>9</td><td>25 dBm</td><td><math>\pm 3</math>dB</td><td>17</td><td>9 dBm</td><td><math>\pm 5</math>dB</td></tr><tr><td>10</td><td>23 dBm</td><td><math>\pm 3</math>dB</td><td>18</td><td>7 dBm</td><td><math>\pm 5</math>dB</td></tr><tr><td>11</td><td>21 dBm</td><td><math>\pm 3</math>dB</td><td>19</td><td>5 dBm</td><td><math>\pm 5</math>dB</td></tr><tr><td>12</td><td>19 dBm</td><td><math>\pm 3</math>dB</td><td></td><td></td><td></td></tr></table>	Level	Power	Toler.	Level	Power	Toler.	5	33 dBm	$\pm 2$ dB	13	17 dBm	$\pm 3$ dB	6	31 dBm	$\pm 3$ dB	14	15 dBm	$\pm 3$ dB	7	29 dBm	$\pm 3$ dB	15	13 dBm	$\pm 3$ dB	8	27 dBm	$\pm 3$ dB	16	11 dBm	$\pm 5$ dB	9	25 dBm	$\pm 3$ dB	17	9 dBm	$\pm 5$ dB	10	23 dBm	$\pm 3$ dB	18	7 dBm	$\pm 5$ dB	11	21 dBm	$\pm 3$ dB	19	5 dBm	$\pm 5$ dB	12	19 dBm	$\pm 3$ dB			
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7	16 dBm	$\pm 3$ dB	15	0 dBm	$\pm 5$ dB																																																			

## 2. PERFORMANCE

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	GSM, EGSM	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600 ~ < 1,200	-60
		1,200 ~ < 1,800	-60
		1,800 ~ < 3,000	-63
		3,000 ~ < 6,000	-65
		6,000	-71
		DCS	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600 ~ < 1,200	-60
		1,200 ~ < 1,800	-60
		1,800 ~ < 3,000	-65
		3,000 ~ < 6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	GSM, EGSM	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24
		GSM	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-22
		600	-24
		1,200	-24
		1,800	-27
7	Spurious Emissions	Conduction, Emission Status	

## 2. PERFORMANCE

Item	Description	Specification		
8	Bit Error Ratio	GSM, EGSM BER (Class II) < 2.439% @-102 dBm DCS BER (Class II) < 2.439% @-100 dBm		
9	RX Level Report Accuracy	± 3 dB		
10	SLR	8 ± 3 dB		
11	Sending Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
		3,400	4	-9
		4,000	0	-
12	RLR	2 ± 3 dB		
13	Receiving Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
		* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.		
14	STMR	13 ± 5 dB		
15	Stability Margin	> 6 dB		
16	Distortion	dB to ARL (dB)		Level Ratio (dB)
		-35		17.5
		-30		22.5
		-20		30.7
		-10		33.3
		0		33.7
		7		31.7
		10		25.5
17	Side Tone Distortion	Three stage distortion < 10%		
18	System frequency (13 MHz) tolerance	≤ 2.5 ppm		

## 2. PERFORMANCE

Item	Description	Specification	
19	32.768KHz tolerance	$\leq 30$ ppm	
20	Power Consumption	Full power $< 243$ mA (GSM, EGSM) ; $< 209$ mA (DVS)  Standby - Normal $< 4$ mA (Max. power)	
21	Talk Time	2h 30m (RF power level 7)	
22	Ringer Volume	At least 80 dB under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
23	Charge Voltage	Fast Charge : $< 500$ mA Slow Charge: $< 60$ mA	
24	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~ -105 dBm
25	Battery Indicator	Battery Bar Number	Voltage
		0	~ 3.62 V
		1	3.62 ~ 3.73 V
		2	3.73 ~ 3.82 V
		3	3.82 V ~
26	Low Voltage Warning	3.62 $\pm$ 0.03 V (Call)	
		3.5 $\pm$ 0.03 V (Standby)	
27	Forced shut down Voltage	3.35 $\pm$ 0.03 V	
28	Battery Type	1 Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity : 820mAh	
29	Travel Charger	Switching-mode charger Input : 100 ~ 240 V, 50/60 Hz Output : 5.2 V, 600 mA	

## 3. TECHNICAL BRIEF

### 3.1 Transceiver (SI4205-BM, U402)

The RF parts consist of a transmitter part, a receiver part, a frequency synthesizer part, a voltage supply part, and a VCTCXO part.

The Aero I transceiver is the integrated RF front end for multi-band GSM/GPRS digital cellular handsets and wireless data modems. The integrated solution eliminates the IF SAW filter, external low noise amplifier (LNAs) for three bands, transmit and RF voltage controlled oscillator (VCO modules), and other discrete components found in conventional designs.

#### Functional Description

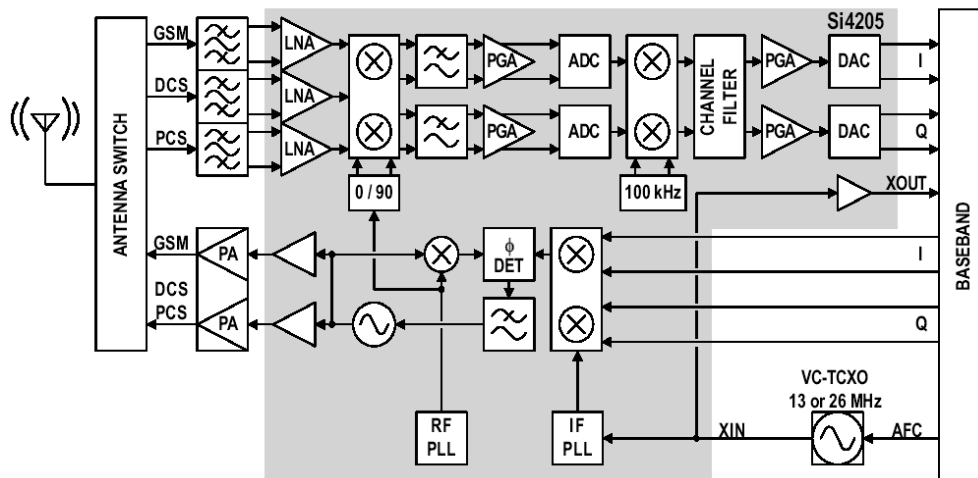


Figure 3-1 Block Diagram of SI4205

#### (1) Receiver part

The Aero I transceiver uses a low-IF receiver architecture which allows for the on chip integration of the channel selection filters, eliminating the external RF image reject filters and the IF SAW filter required in conventional superheterodyne architectures.

##### A. RF front end

RF front end consists of Antenna Switch(FL401), two SAW Filters(FL402, FL403) and dual band LNAs integrated in transceiver (U402).

The Received RF signals(GSM 925MHz ~ 960MHz, DCS 1805MHz ~ 1880MHz) are fed into the antenna or Mobile switch.

The Antenna Switch(FL401) is used to control the Rx and Tx paths. And, the input signals VC1 and VC2 of a FL401 are directly connected to baseband controller to switch either Tx or Rx path on.

The logic and current is given below Table 3-1.



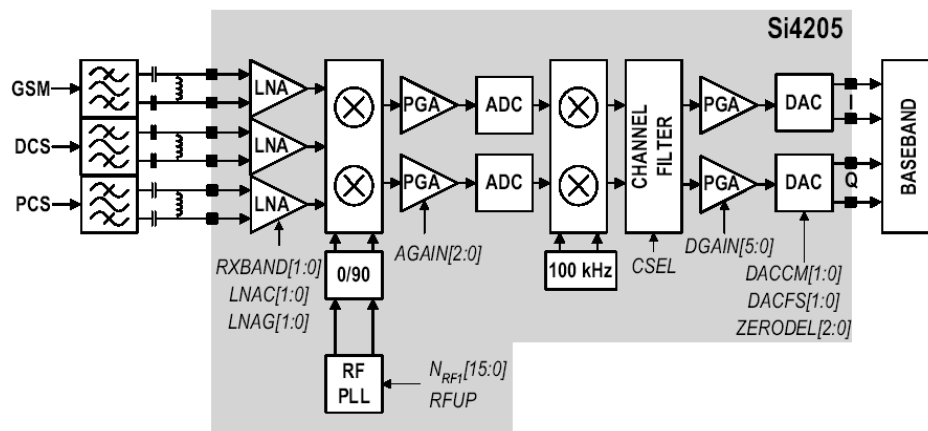
### 3. TECHNICAL BRIEF

**Table 3-1 The Logic and current**

	VC1	VC2	Current
DCS TX	0V	2.5 ~ 3.0V	10.0 mA max
GSM TX	2.5 ~ 3.0V	0V	10.0 mA max
GSM/DCS RX	0V	0V	< 0.1 mA

Three differential-input LNAs are integrated in SI4205. The GSM input supports the GSM 850 (869-849 MHz) or E-GSM 900 (925-960MHz) bands. The DCS input supports the DCS 1800 (1805-1880 MHz) band. The PCS input supports the PCS 1900 (1930-1990 MHz) band.

The LNA inputs are matched to the 150Ω balanced output SAW filters through external LC matching networks. The LNA gain is controlled with the LNAG[1:0] and LNAC[1:0] bits in register 05h (Figure 3-2).



**Figure 3-2 Block Diagram of Receiver part of SI4205**

#### B. Intermediate frequency (IF) and Demodulation

A quadrature image-reject mixer downconverts the RF signal to a 100KHz intermediate frequency (IF) with the RFLO from the frequency synthesizer. The RFLO frequency is between 1737.8 to 1989.9 MHz, and is internally divided by 2 for GSM 850 and E-GSM 900 modes. The mixer output is amplified with an analog programmable gain amplifier (PGA), which is controlled with the AGAIN[2:0] bits in register 05h (Figure3-2). The quadrature IF signal is digitized with high resolution A/D converters (ADCs).

The ADC output is downconverted to baseband with a digital 100KHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. The selectivity setting (CSEL=0) or a low selectivity setting (CSEL=1). The low selectivity filter has a flatter group channelization filter is in the baseband chip. After channel selection, the digital output is scaled with a digital PGA, which is controlled with the DGAIN [5:0] bits in register 05h.

The amplified digital output signal go through with DACs that drive a differential analog signal onto the RXIP,RXIN,RXQP and RXQN pins to interface to standard analog ADC input baseband ICs. No

The transmit (Tx) section consists of an I/Q baseband upconverter, and offset phase-locked loop (OPLL) and two output buffers that can drive external power amplifiers (PA), one for the GSM 850 (824-849 MHz) and E-GSM 900 (880-915 MHz) bands and one for the DCS 1800 (1710-1785 MHz) and PCS 1900 (1850-1910MHz) bands.

The baseband converter(BBC) within the GSM chipset generates I and Q baseband signals for the Transmit vector modulator. The modulator provides more than 40dBc of carrier and unwanted sideband rejection and produces a GMSK modulated signal. The baseband software is able to cancel out differential DC offsets in the I/Q baseband signals caused by imperfections in the D/A converters. The Tx-Modulator implements a quadrature modulator. A quadrature mixer upconverts the differential in-phase (TXIP, TXIN) and quadrature (TXQP, TXQN) signals with the IFLO to generate a SSB IF signal that is filtered and used as the reference input to the OPLL.

The OPLL consists of a feedback mixer, a phase detector, a loop filter, and a fully integrated TXVCO. The TXVCO is centered between the DCS 1800 and PCS 1900 bands, and its output is divided by 2 for the GSM 850 and E-GSM 900 bands. The RFLO frequency is generated between 1272 and 1483 MHz. To allow a single VCO to be used for the RFLO, high-side injection is used for the GSM 850 and E-GSM 900 bands, and low-side injection is used for the DCS 1800 and PCS 1900 bands. The I and Q

\_\_\_\_\_

Low-pass filters before the OPLL phase detector reduce the harmonic content of the quadrature modulator and feedback mixer outputs. The cutoff frequency of the filters is programmable with the FIF[3:0] bits in register 04h (Figure 3-3), and should be set to the recommended settings detailed in the register description.



### 3.2 Power Amplifier Module (RF3133, U401)

The RF3133 is a high-power, high-efficiency power amplifier module with integrated power control. The device is self-contained with 50 $\Omega$  input and output terminals. The power control function is also incorporated, eliminating the need for directional couplers, detector diodes, power control ASICs and other power control circuitry; this allows the module to be driven directly from the DAC output.

The device is designed for use as the final RF amplifier in GSM 850, E-GSM 900, DCS and PCS handheld digital cellular equipment and other applications in the 824-849 MHz, 880-915 MHz, 1710-1785 MHz, and 1850-1910 MHz bands.

On-board power control provides over 37 dB of control range with an analog voltage input (TX\_RAMP); and, power down with a logic "low" for standby operation (TX\_ENABLE).

External control (BAND\_SELECT) is used to select the GSM or DCS band with a logic high or low. A logic low enables the GSM band whereas a logic high enables the DCS band.

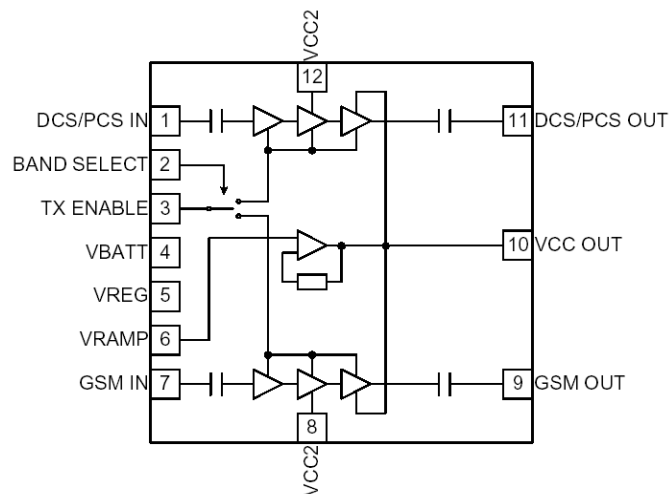


Figure 3-5 Functional Block Diagram of RF3133

### 3. TECHNICAL BRIEF

#### 3.3 13 MHz Clock

The 13 MHz clock(X401) consists of a TCXO(Temperature Compensated Crystal Oscillator) which oscillates at a frequency of 13 MHz. It is used within the Si4205, analog base band chipset(U102,AD6521), digital base band chipset(U101, AD6525), and MIDI (U204) chipset.

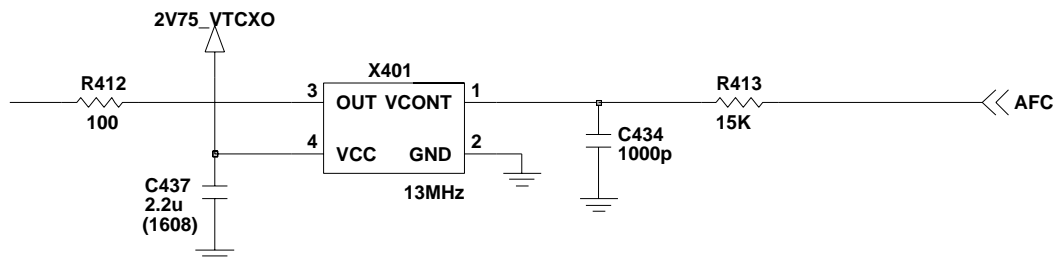


Figure 3-6 VCTCXO circuit diagram

#### 3.4 Power Supplies for RF Circuits

Two regulators are used for RF circuits. One is MIC5255 (U410), and the other is one port of ADP3522 (U202).

MIC5255 (U410) supplies power to transceiver (SI4205, U402).One port of ADP3522 supplies power to VCTCXO (X401).

Main power (VBAT) from battery is used for PAM (RF3133, U401) because PAM requires high power.

Table 3-2 Power suppliers for RF circuits.

Supplier	Voltage	Powers	enabled signal
U410	2.85 V	U402	CLK_ON
U202	2.75 V	X401	
Battery	3.4 ~ 4.2 V	U401	

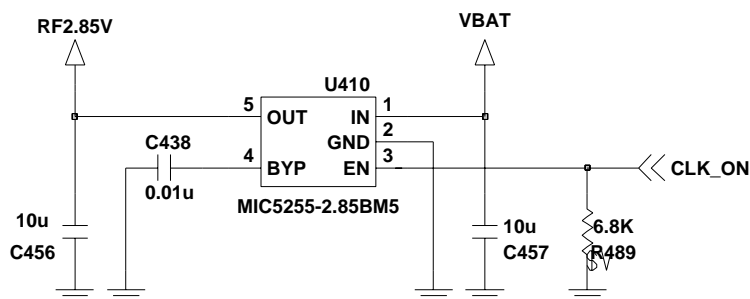
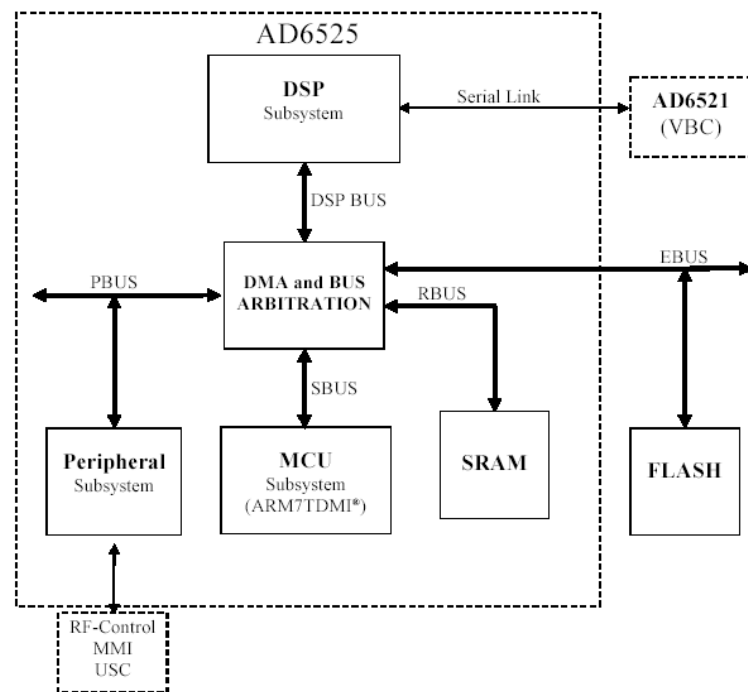


Figure 3-7 U410 circuit diagram

### 3.5 Digital Main Processor (AD6525, U101)

#### (1) Architecture Overview



**Figure 3-8 Block Diagram of the AD6525 Internal Architecture**

The internal architecture of AD6525 is shown in Figure 3-8. AD6525 regroups three main subsystems connected together through a dynamic and flexible communication by network. It also includes onboard system RAM (SRAM) and interfaces with external Flash Memory, Baseband converter functions, and terminal functions like MMI, SIM and Universal System Connector (USC).

The Digital Signal Processing (DSP) subsystem primarily hosts all the speech processing, channel equalization and channel codec functions. The code used to implement such functions can be stored in external Flash Memory and dynamically downloaded on demand into the DSP's program RAM and Instruction Cache.

The microcontroller subsystem supports all the GSM terminal software, including the layer 1, 2 and 3 of the GSM protocol stack, the MMI, and applications software such as data services, test and maintenance. It is tightly associated with on-chip system SRAM and also includes boot ROM memory with a small dedicated routine to facilitate the initialization of the external Flash Memory via code download using the on-chip serial interface to the external Flash Memory interface.

The peripheral subsystem is composed of system peripherals such as interrupt controller, real time clock, watch dog timer, power management and a timing and control module. It also includes peripheral interfaces to the terminal functions: keyboard, battery supervision, radio and display. Both the DSP and the MCU can access the peripheral subsystem via the peripheral bus (PBUS).

### 3. TECHNICAL BRIEF

For program and data storage, both the MCU subsystem and the DSP subsystem can access the on chip system SRAM and external memory such Flash Memory. The access to the SRAM module is made through the RAM Bus (RBUS) under the control of the bus arbitration logic. Similarly, access to the Flash Memory is through the parallel External Bus (EBUS).

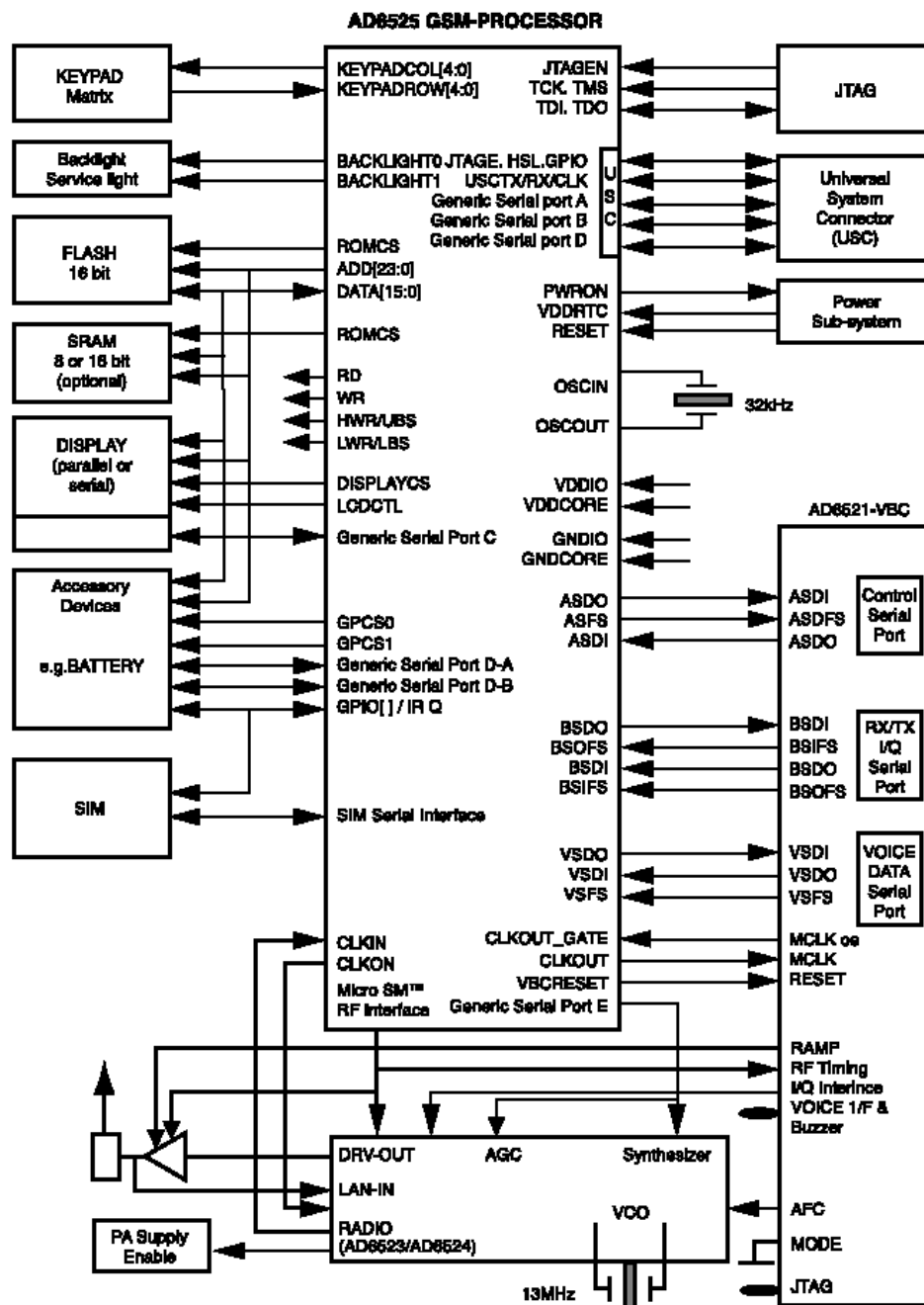


Figure 3-9 Example of System Interconnection of AD6525 External Interfaces

## (2) Interconnection with external devices

### A. RTC Block Interface

Countered by external crystal oscillator (MC-146, X101).

The X-tal oscillates 32.768 KHz.

### B. LCD Module Interface

Controlled by LCD\_CS, LCD\_RES, ADD01, WR, DATA[0:15], DIM\_CNTL, and LCD\_ID.

**Table 3-3 LCD module interface**

	Description
LCD_CS	LCD driver chip enable. LCD driver IC has own CS pin
LCD_RES	This pin resets LCD module.
ADD01	This pin determines whether the data to LCD module are display data or control data. ADD1 can select 16 bit parallel bus. ADD1 is also used to address flash memory.
WR	Write control.
DATA[0:15]	Parallel data lines. Color LCD driver chip uses the 16 bit data interface.
LCD_BL	Control signal for white LED(LCD backlight) driver IC.
LCD_ID	Reserved for future use.

### C. RF Interface

The AD6525 control RF parts through RF\_EN, ANT\_SW1/2, PA\_EN, PA\_BAND, RF\_PWR\_DWN, S\_EN, S\_DATA, AND S\_CLK.

**Table 3-4 RF interface**

GPO	Signal Name	Description
4	RF_EN	RF Enable / Disable
9	ANT_SW1	Antenna Switch Band Select
11	ANT_SW2	Antenna Switch Band Select
16	PA_EN	PAM Enable / Disable
17	PA_BAND	PAM Band Select
18	RF_PWR_DWN	Power Down Input
19	S_EN	Serial Enable Input
20	S_DATA	Serial Data Input
21	S_CLK	Serial Clock Input



### 3. TECHNICAL BRIEF

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#### D. SIM Interface

The AD6525 check status periodically in call mode if SIM card is inserted or not, but the AD6525 don't check in deep sleep mode.

Interface signals are SIM\_DATAOP, SIM\_CLK, SIM\_RST, SIM\_EN

**Table 3-5 SIM interface**

	Description
SIM_DATAOP	This pin receives and sends data to SIM card. This model support 3.0 volt interface SIM card.
SIM_CLK	Clock 3.25 MHz frequency.
SIM_RST	Reset SIM Block
SIM_EN	Enable SIM Block

#### E. Key Interface

Key Interface includes 5 column (KEYCOL[0:4]) and 5 row (KEYROW[0:4]). AD6525 detects key press by interrupt.

#### F. ADP3522(PMIC, U202) Interface

There are 4 signals for PMIC (power management IC) interface.

**Table 3-6 PMIC interface**

	Description
CHRDET	The pin is activated when charger is inserted.
CHG_EN	Enable charging
EOC	The pin is activated by PMIC when VBAT reaches 4.2V.
GATE_EN	Control signal from AD6525 to charge NiMH battery. Not used.

### 3.6 Analog Main Processor (AD6521, U102)

#### (1) Block Diagram

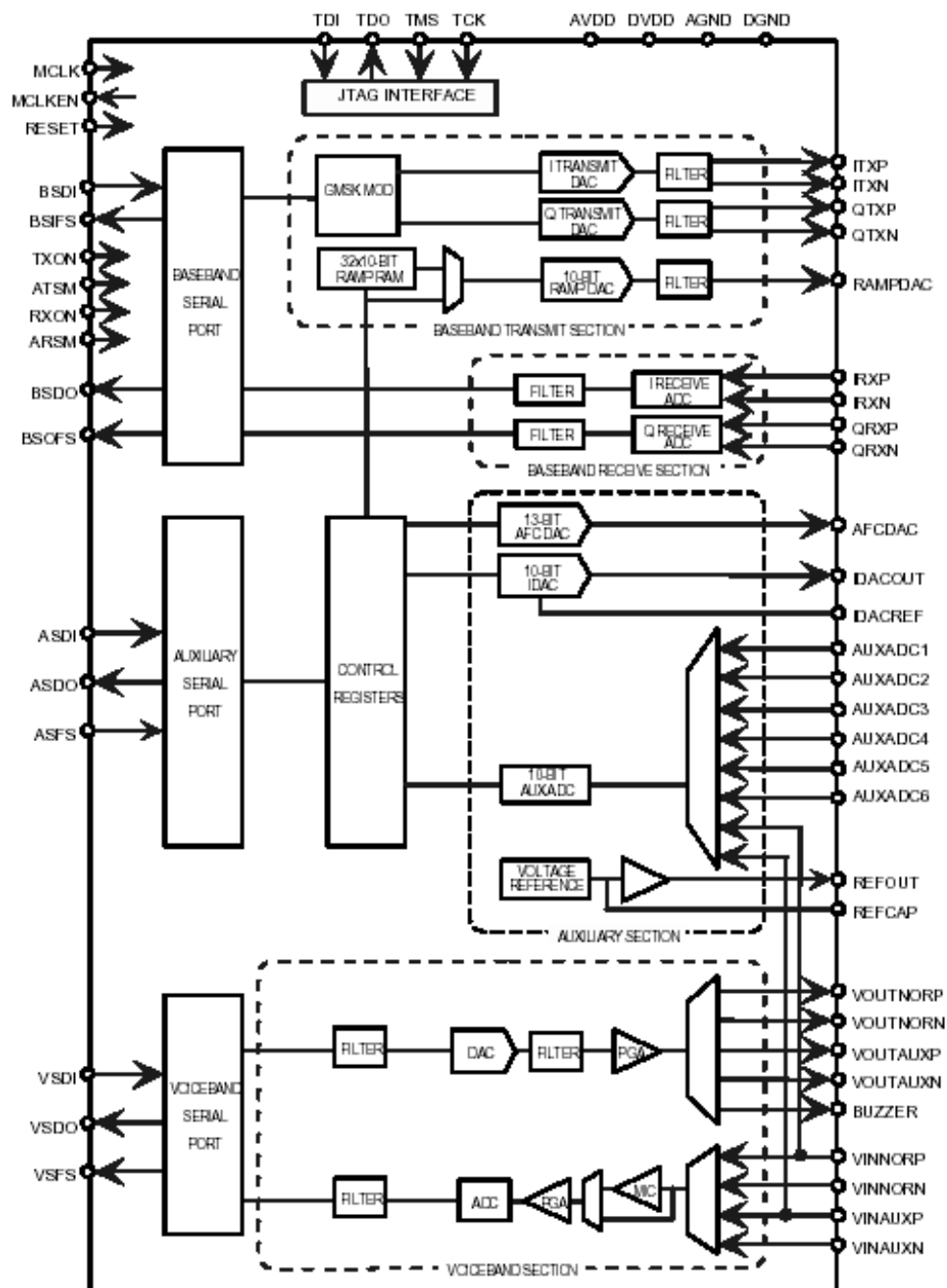


Figure 3-10 Functional Block Diagram of AD6521

### 3. TECHNICAL BRIEF

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#### (2) BB Transmit Section

This section generates in-phase and quadrature BB modulated GMSK signals ( $BT = 0.3$ ) in accordance with GSM 05.05 Phase 2 specifications.

The transmit channel consists of a digital GMSK modulator, a matched pair of 10-bit DACs and a matched pair of reconstruction filter.

There are TXIP, TXIN, TXQP, TXQN, and RAMPDAC.

#### (3) BB Receiver Section

This section consists of two identical ADC channels that process baseband in-phase(I) and quadrature(Q) input signals.

Each channel consists of a coarse switched capacitor input filter, followed by a high-order sigma-delta modulator and a lowpass digital filter.

There are RXIP, RXIN, RXQP, and RXQN.

#### (4) Auxiliary Section

This section contains two auxiliary DACs(AFC DAC, IDAC) for system control.

This section also contains AUX ADC and Voltage Reference

AUX ADC : 6 channel 10 bits

AFC DAC : 13 bits

IDAC : 10 bits

#### (5) Voiceband Section

Receive audio signal from MIC. Send audio signal to Receiver. The phones use differential configuration. It interconnects external devices such as main microphone, main receiver, ear-phone through the VINNORP, VINNORN, VOUTNORP, VOUTNORN, VINAUXP, VINAUXN, VOUTAUXP, and VOUTAUXN

**VINNORP, VINNORN:** Main MIC positive/negative terminal.

**VOUTNORP, VOUTNORN:** Main Receiver positive/negative terminal.

**VINAUXP, VINAUXN:** ear-phone microphone positive/negative terminal.

**VOUTAUXP, VOUTAUXN:** ear-phone speaker positive/negative terminal.



### 3. TECHNICAL BRIEF

## 3.7 Power Management IC (ADP3522, U202)

Block Diagram

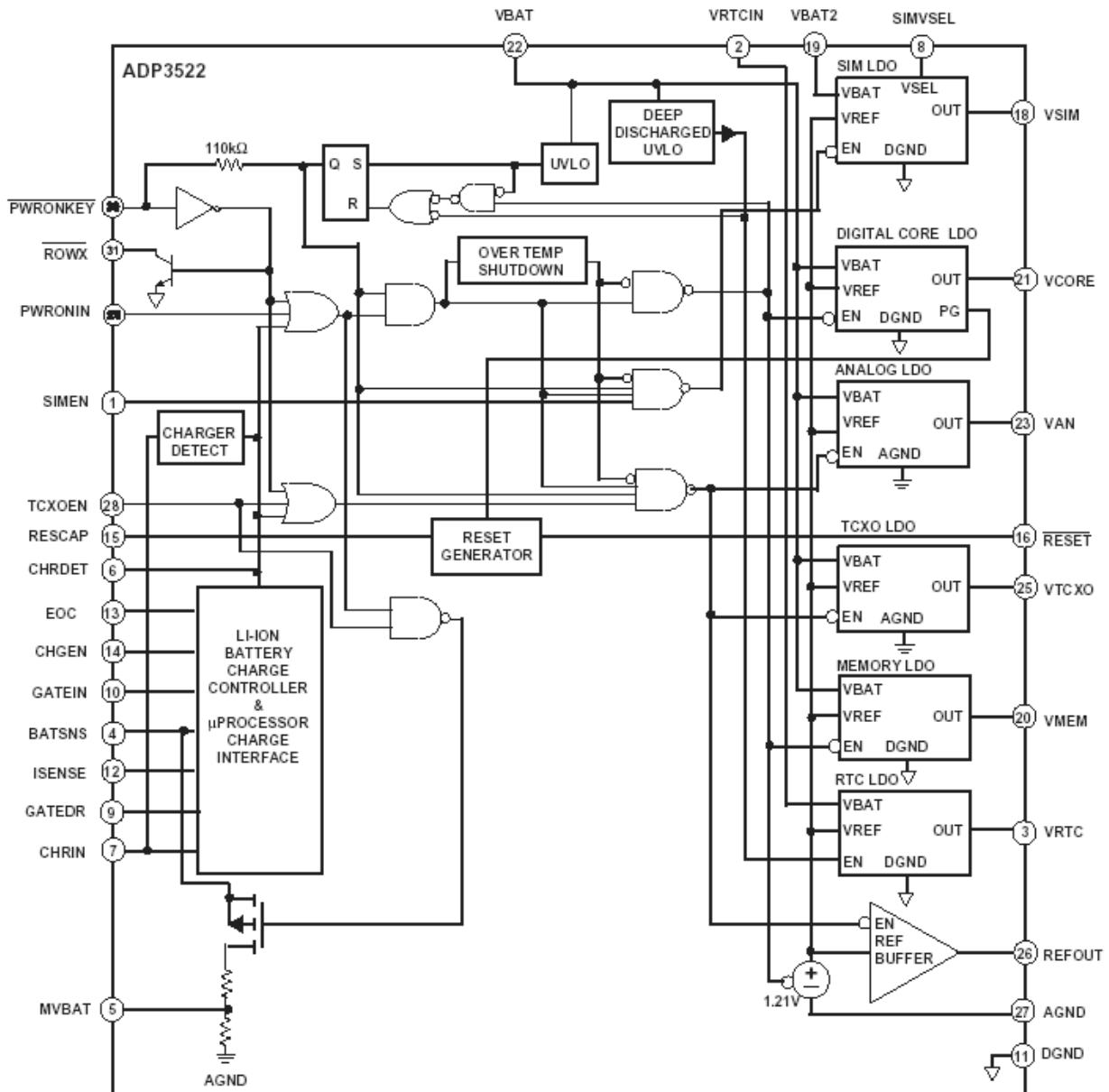


Figure 3-12 Block Diagram of ADP3522.

**Table 3-7 LDOs of ADP3522.**

	Description
VSIM	2.85V (is provided to Sim card)
VCORE	1.8V (is provided to the AD6525 & AD6521's digital core)
VRTC	2.0V (is provided to the RTC and Backup Battery)
VAN	2.55V (is provided to the AD6521 I/O and used as microphone bias)
VTCXO	2.75V (is provided to VCTCXO)
VMEN	2.8V (is provided to Flash)

#### **Power on sequence**

If a battery is inserted, the battery powers the 6 LDOs.

Then if PWRONKEY is detected, the LDOs output turn on.

REFOUT is also enabled, Reset signal is generated and send to the AD6525.

#### **LDO block**

There are 6 LDOs in the ADP3522.

#### **Charging Process**

1. Check charger is inserted or not.
2. If ADP3522 detects that Charger is inserted, the CC-CV charging starts.
3. Exception: When battery voltage is lower than 3.2V, the trickle charge (low current charge mode) starts firstly. After the battery voltage reaches to 3.2V, the CC-CV charging starts.

#### **Battery charging block**

It can be used to charge Lithium Ion and/or Nickel Metal Hydride batteries. The phones use Li-Ion battery only. Charger initialization, trickle charging, and constant current charging are implemented in hardware.

#### **Pins used for charging**

**CHGDET** : Interrupt to AD6525 when charger is plugged.

**CHG\_EN** : Control signal from AD6525 to charge battery.

**EOC** : Interrupt to AD6525 when battery is fully charged.

**GATE\_EN** : Control signal from AD6525 to charge NiMH battery. But, not used.

#### **TA (Travel Adaptor)**

**Input voltage** : AC 110V ~ 240V, 50~60Hz

**Output voltage** : DC 5.2V(  $\pm 0.2$  V)

**Output current** : Max 800mA

#### **Battery**

**Li-ion battery** : Max 4.2V, Nom 3.7V

**Standard battery** : Capacity - 820mAh, Li-ion

### 3. TECHNICAL BRIEF

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#### 3.8 Memory (U201)

The memory consists of 128Mbit Nor Flash Memory and 32Mbit Pseudo SRAM. It has 16 bit parallel data bus and 22 bit address.

Software, RF calibration data, audio parameters and battery calibration data are stored in the Flash memory.

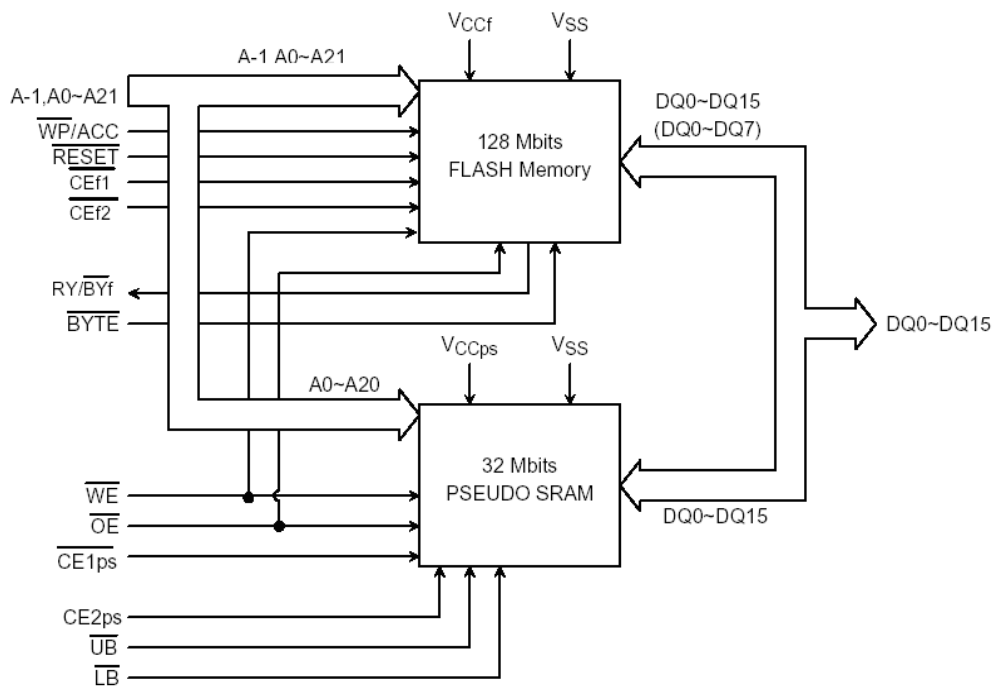


Figure 3-13 Block Diagram of Memory.

**Table 3-8 Pin Description of U201.**

A-1,A0 to A21	Address inputs
DQ0 to DQ15	Data inputs / outputs
$\overline{\text{CE}}_{1\text{ps}}$ , $\overline{\text{CE}}_{2\text{ps}}$	Chip enable inputs for Pseudo SRAM
$\overline{\text{CE}}_{1\text{f}}$ , $\overline{\text{CE}}_{2\text{f}}$	Chip enable inputs for Nor Flash Memory
$\overline{\text{OE}}$	Output enable input
$\overline{\text{WE}}$	Write enable input
$\overline{\text{LB}}$ , $\overline{\text{UB}}$	Data byte control inputs for Pseudo SRAM
$\overline{\text{WP/ACC}}$	Write protect /program acceleration input for Nor Flash Memory
$\overline{\text{RESET}}$	Hardware reset input for Nor Flash Memory
$\overline{\text{BYTE}}$	Word/Byte onput for Nor Flash Memory
$\text{RY/ } \overline{\text{BY}}$	Ready/Busy output for Nor Flash Memory
$\text{V}_{\text{CCps}}$	power supply for Pseudo SRAM
$\text{V}_{\text{CCf}}$	power supply for Nor Flash Memory
$\text{V}_{\text{SS}}$	Ground
DU	Don't use
NC	Not connected



### 3. TECHNICAL BRIEF

## 3.9 LCD and LCD Backlight

### (1) LCD Features

**Display Mode** : 65K Color STN LCD

**Color Depth** : 32(Red) \* 64(Green) \* 32(Blue) = 65K Color

**Resolution** : 128 \* RGB \* 160 dots for Color display

**Interface** : 8080-series MPU interface

**Data bus** : 16 bit Parallel interface

**Duty ratio** : 1/160 Duty for Color display

**Viewing Direction** : 12 o'clock

**LCD Driver** : S6B33B0A by SEC

**Display RAM capacity** : 144 x 16 x 176 = 405.504k bits for Color display

Control Signal is explained in Table 3-3.

### (2) LCD Backlight

For LCD backlight illumination, there are LCD\_BL and DIM\_CNTL signal from AD6525.

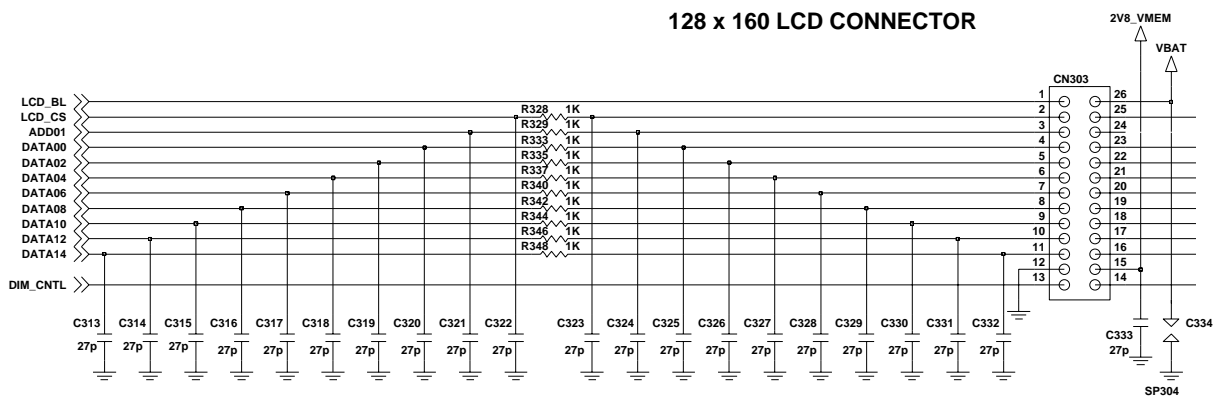


Figure 3-14 Circuit Diagram of Driver IC for LCD backlight.

## 3.10 Keypad Switches and Key Backlight Illumination

### (1) Keypad Switches

The key switches are metal domes, which make contact between two concentric pads on the keypad layer of the PCB when pressed. There are 21 switches, connected in a matrix of 5 rows by 5 columns, as shown in Figure, except for the power switch (END), which is connected independently. Functions, the row and column lines of the keypad are connected to ports of AD6525. The columns are outputs, while the rows are inputs and have pull-up resistors built in. When a key is pressed, the corresponding row and column are connected together, causing the row input to go low and generate an interrupt. The columns/rows are then scanned by AD6525 to identify the pressed key.

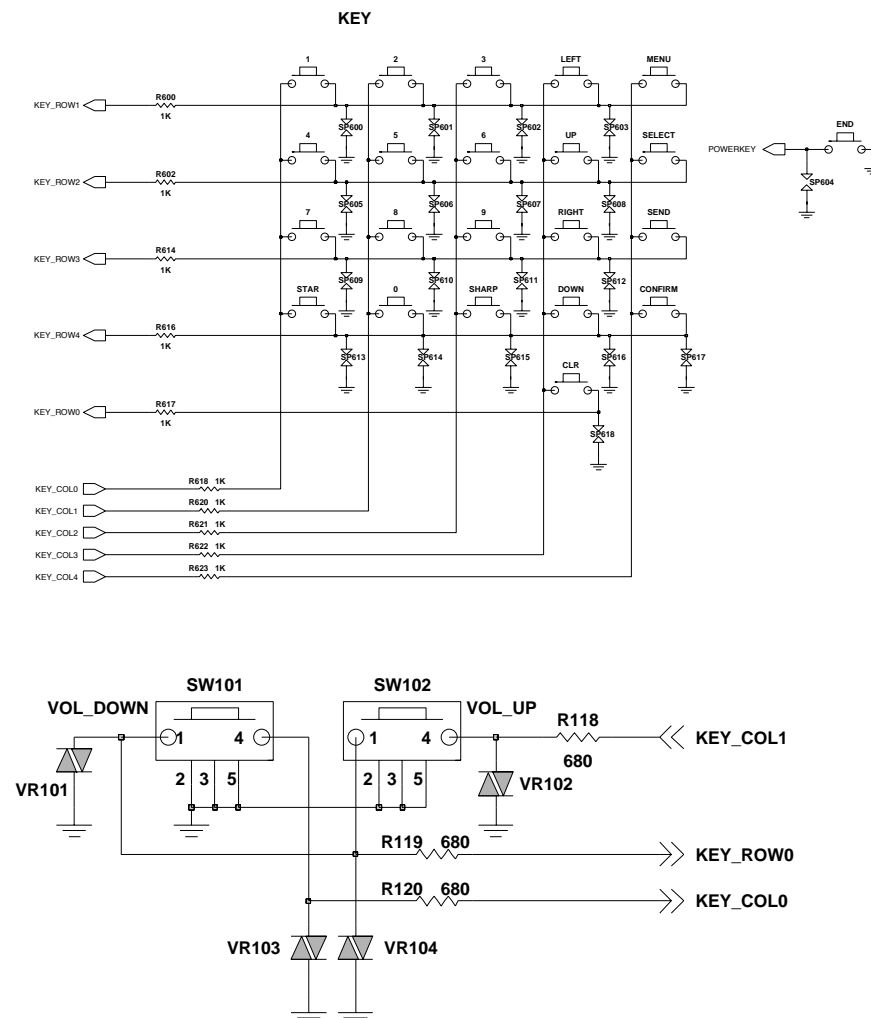


Figure 3-15 Circuit Diagram of Keypad Switches & side key

### 3. TECHNICAL BRIEF

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#### (2) Key Backlight Illumination

There are 10 blue LEDs for key backlight illumination which are driven by KEY\_BL signal from AD6525.

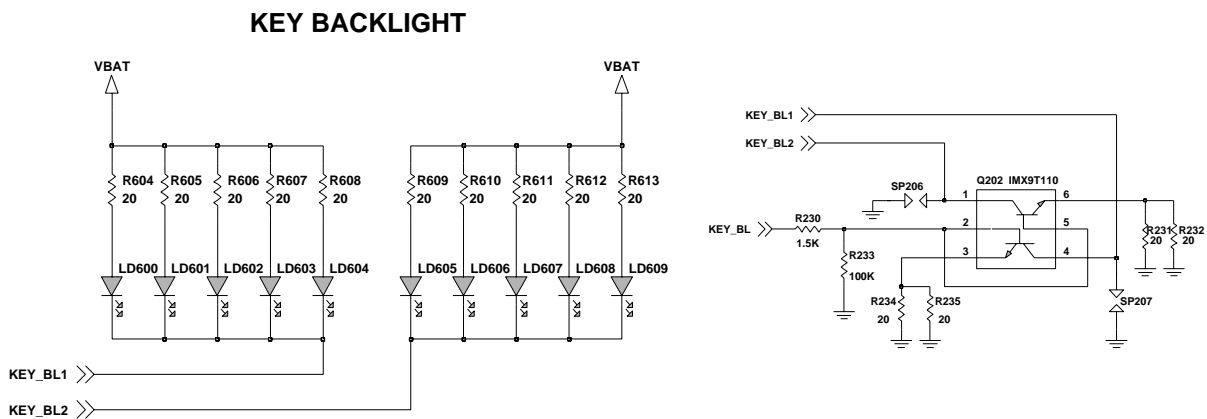


Figure 3-16 Circuit Diagram of Key backlight illumination

### 3.11 Microphone

The microphone is placed to KEY PCB. The audio signal is passed to VINNORP and VINNORN pins of AD6521. The voltage supply 2V55\_VAN is output from ADP3522, and is a bias voltage for the VINNORP.

The VINNORP and VINNORN signals are A/D converted by the Voiceband ADC part of AD6521. The digitized speech is then passed to the DSP section of AD6525 for processing (coding, interleaving etc).

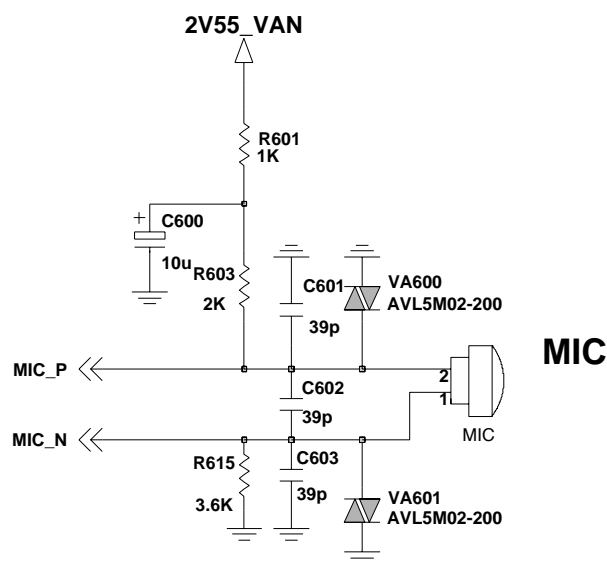


Figure 3-17 Circuit Diagram of Microphone.

### 3. Technical brief

## 3.12 Dual Mode Speaker and MIDI IC

### (1) Dual Mode Speaker

There is a control signal (SPK\_SEN) which is for enabling receiver or speaker because one dual mode speaker is used for both receiver and speaker. The signal is produced by AD6525 and controls the analog switch (U203).

The dual mode speaker is placed in the front cover and contacted to main PCB.

#### A. Receiver Operation

The dual mode speaker is driven by VOUTNORP and VOUTNORN of AD6521 through an analog switch (U203) when it is used for receiver. The gain is controlled by the PGA in AD6521.

#### B. Speaker Operation

The dual mode speaker is driven by SPOUT1 and SPOUT2 of YMU762 (U204) through the analog switch (U203) when it is used for loud speaker.

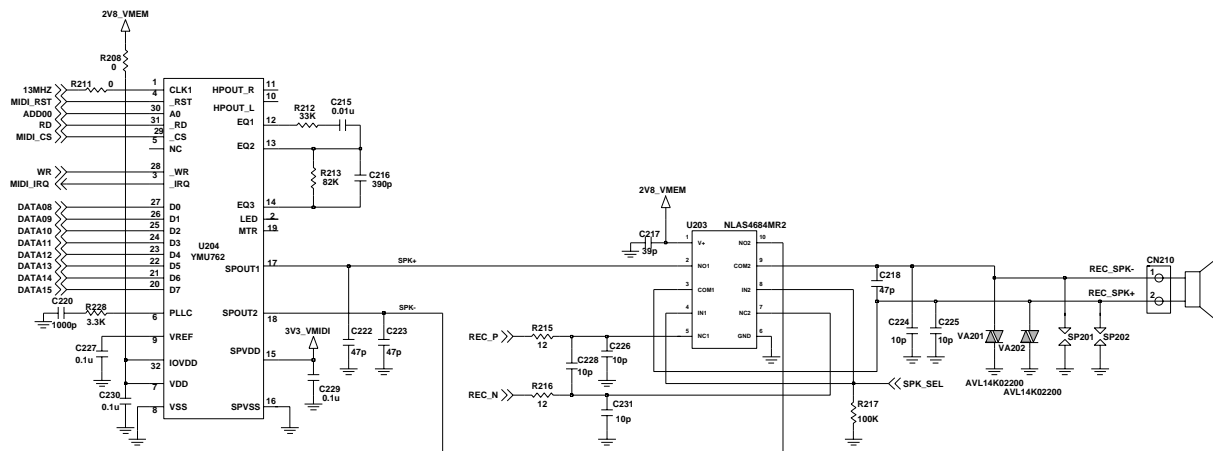


Figure 3-18 Circuit Diagram of Dual Mode Speaker.

#### (2) MIDI IC (YMU762, U204)

The phone uses melody IC which makes the robust joyful melody sounds.

6 signals (MIDI\_RST, ADD00, RD, MIDI\_CS, WR, MIDI\_IRQ) from AD6525 are used to control the melody IC.

Melody data (DATA[8:15]) is transferred to melody IC and played by the dual mode speaker.

External 3.3V LDO (U206) is used for the MIDI chip because the maximum output current of analog amplifier in melody IC is 300mA.

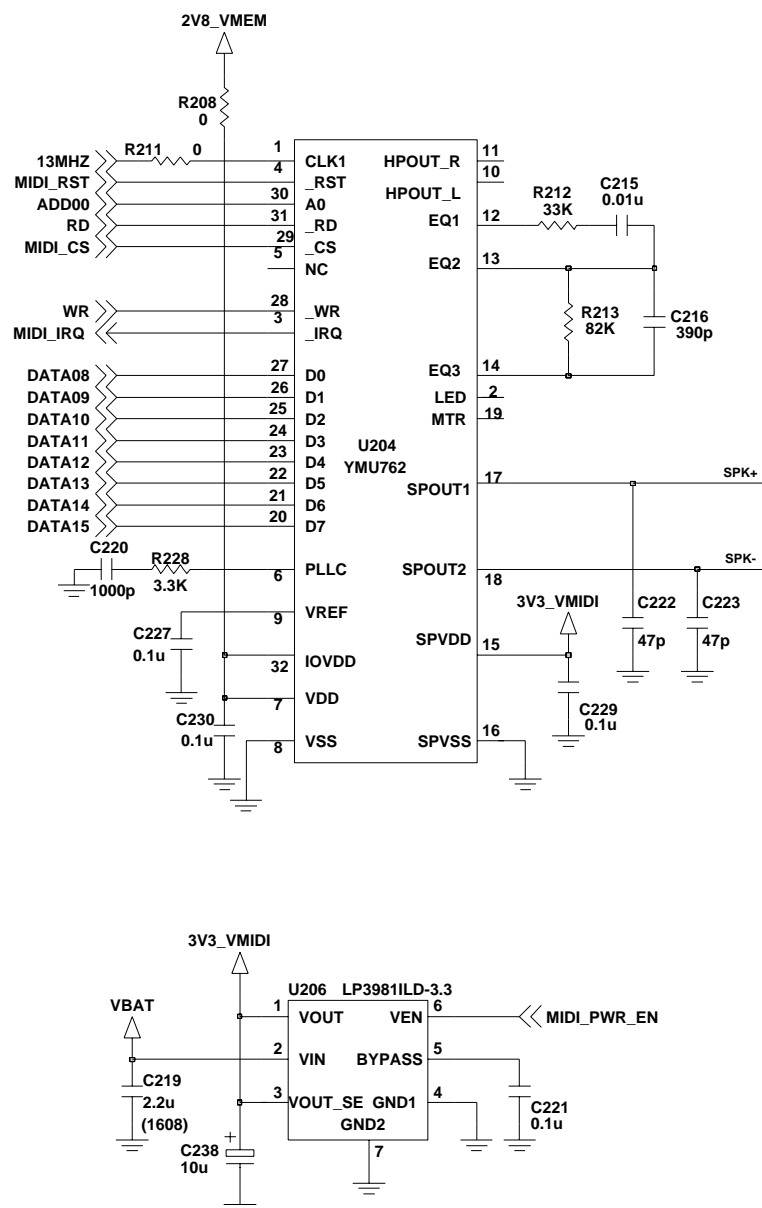


Figure 3-19 Circuit Diagram of MIDI-IC and external LDO.

### 3. TECHNICAL BRIEF

#### 3.13 Headset Jack Interface

3-pole type ear-mic jack which has three electrodes such as Receiver+, Mic+, and GND. This type usually supports only single-ended configuration (VOUTAUXP for headset speaker and VINAUXP for headset mic) in the audio path.

There are two control signals for jack interface. One is JACK\_DETECT which is for detecting the headset jack and the other is HOOK\_DETECT which is enabled when hook of the headset is pressed. The pins (JACK\_DETECT and HOOK\_DETECT) interfaces with AD6525.

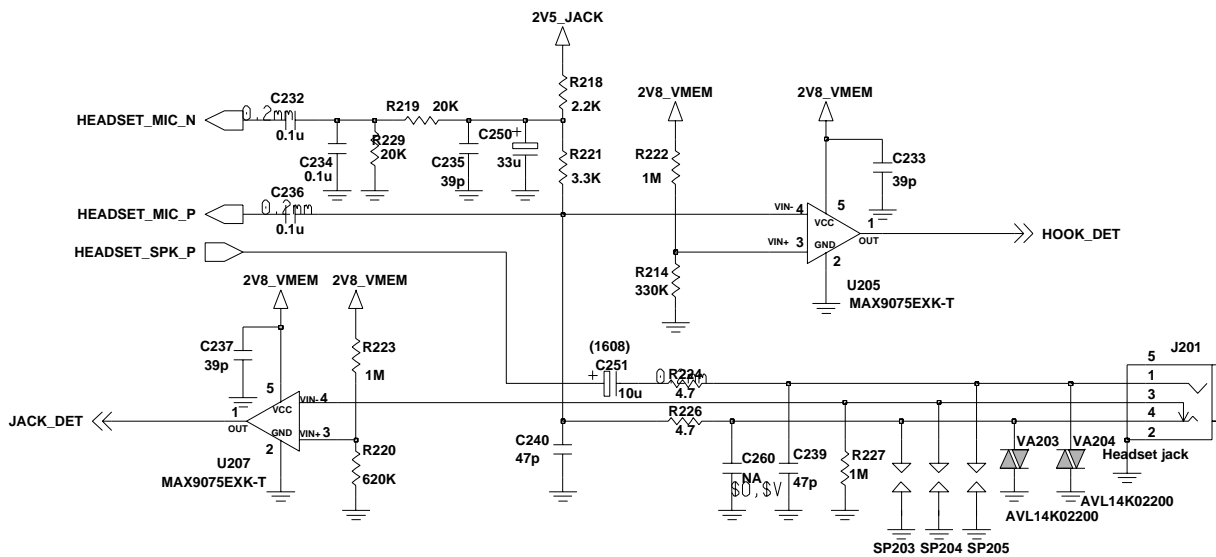


Figure 3-20 Circuit Diagram of Headset Interface.

### 3.14 Compass

The AMI201 is a magnetic sensor for use in electronic compasses that integrates Two perpendicularly positioned Magneto-Impedance sensors with their controller IC in a single small package. The AMI201 outputs linear voltages corresponding to the magnetic field strength in the direction of each of the two sensors.

**Maker :** Aichi Micro Intelligent(Japan)

**Part No. :** AMI201

**Size :** 3.1X3.4X0.8(mm)

**Sensing Method :** Magneto-Impedance

**Axis :** X,Y axis

**Resolution :** 1 Degree

**6pins**

- **Control Pin :** 2 pin(CS,XYIN)

- **Output Pin :** 1 pin(OUT)

- **Power Pin :** 3 pins(VDD,GND1,GND2)

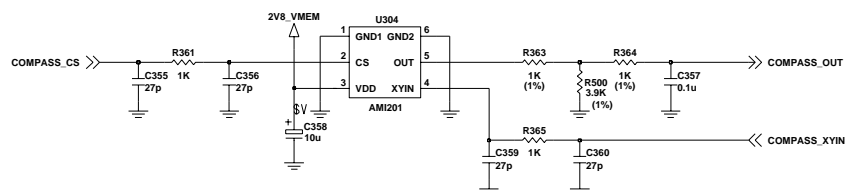
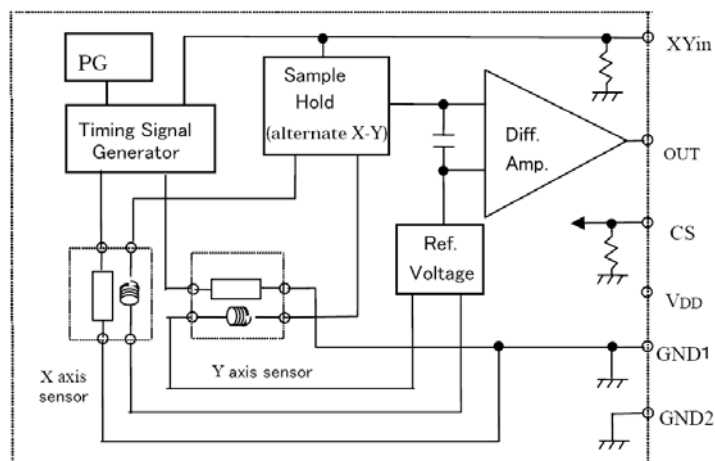


Figure 3-21 Circuit Diagram of Compass Interface.



# 4. TROUBLE SHOOTING

## 4.1 RF Components

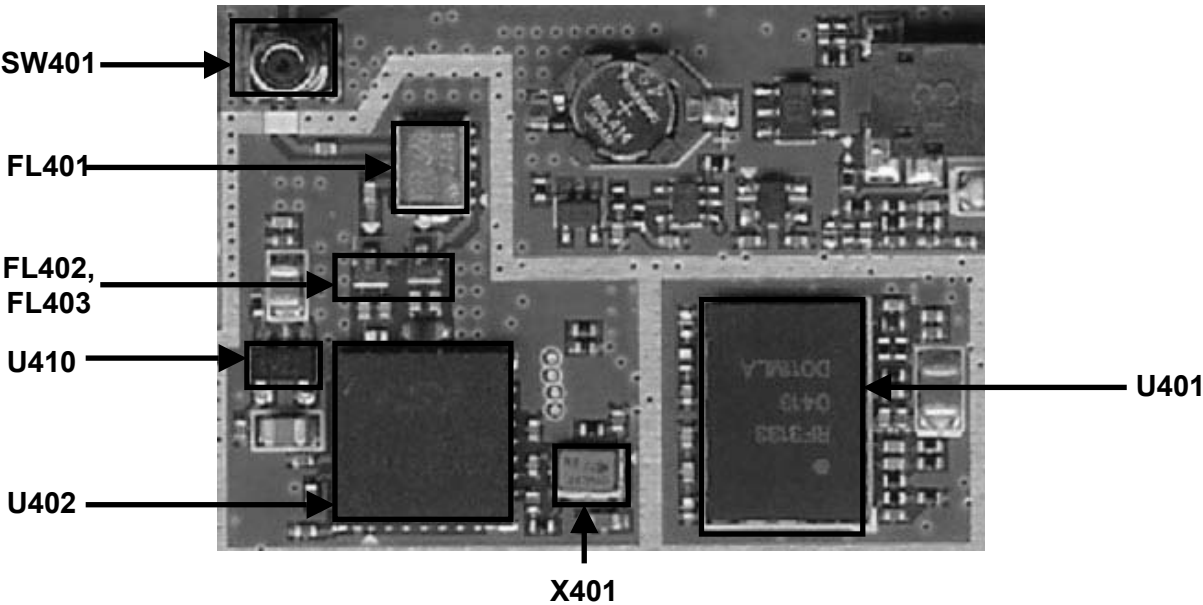


Figure 4-1

Table 4-1

Reference	Description	Reference	Description
U402	RF Main Chipset	FL402	GSM SAW Filter
SW401	Mobile S/W	FL403	DCS SAW Filter
FL401	Ant. S/W	X401	VCTCXO
U401	PAM	U410	LDO

## 4.2 RX Trouble

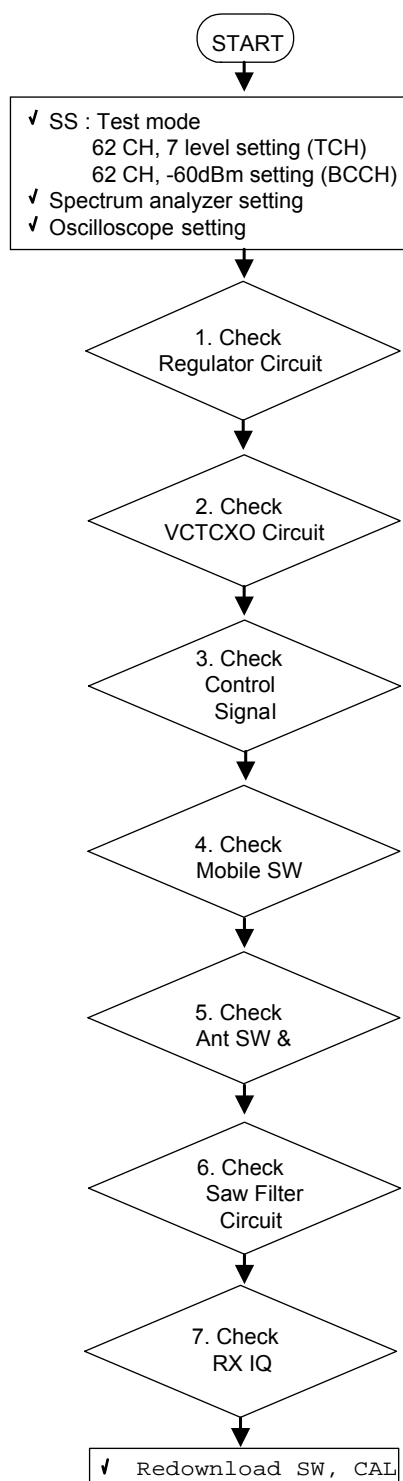
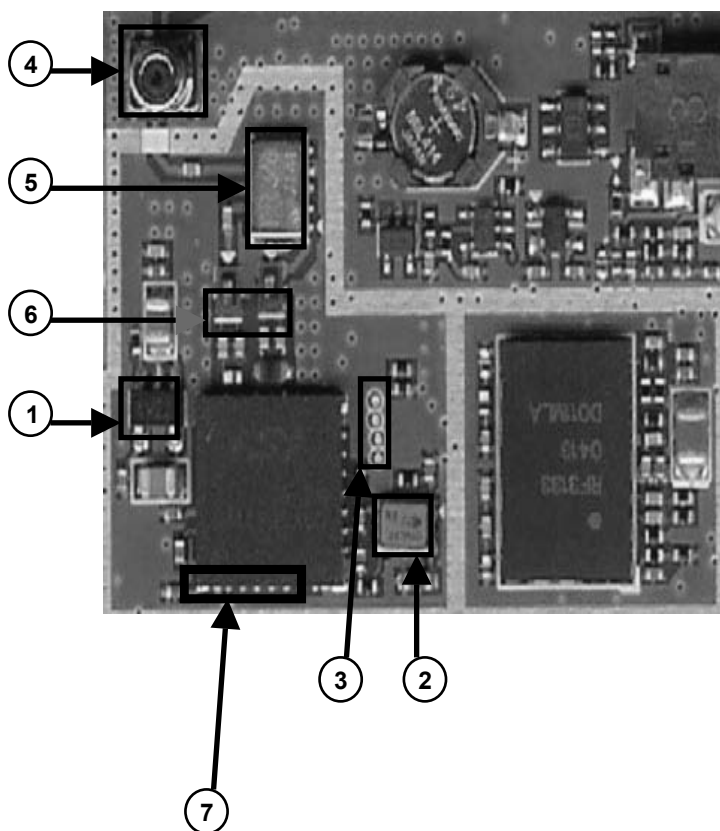
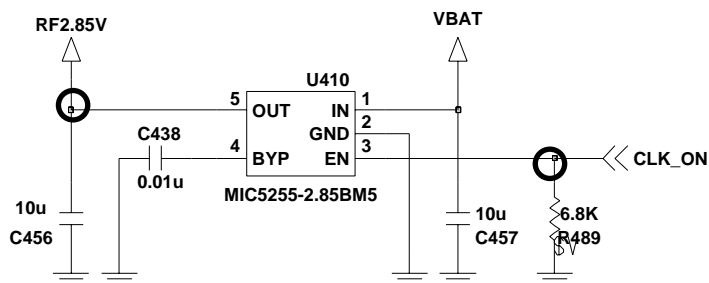
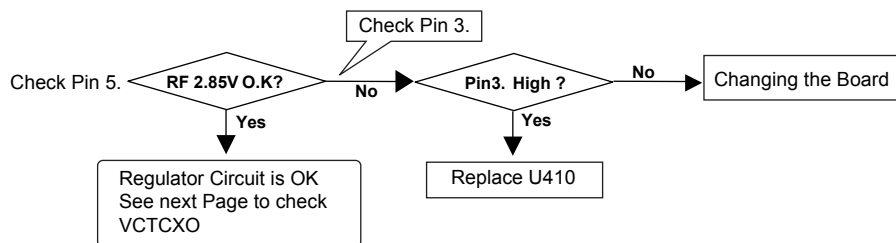
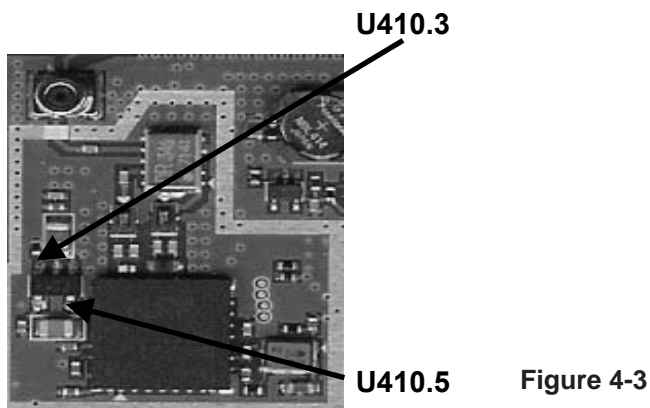


Figure 4-2

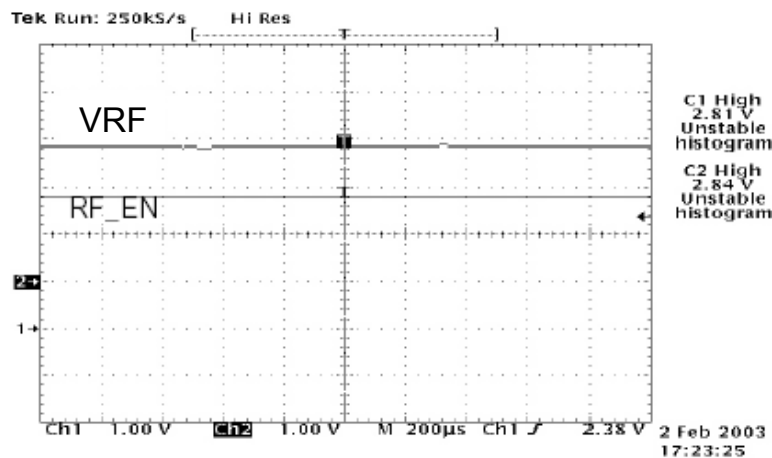


## 4. TROUBLE SHOOTING

### 4.2.1 Checking Regulator Circuit



Circuit Diagram 4-1



Graph 4-1

## 4.2.2 Checking VCTCXO Circuit

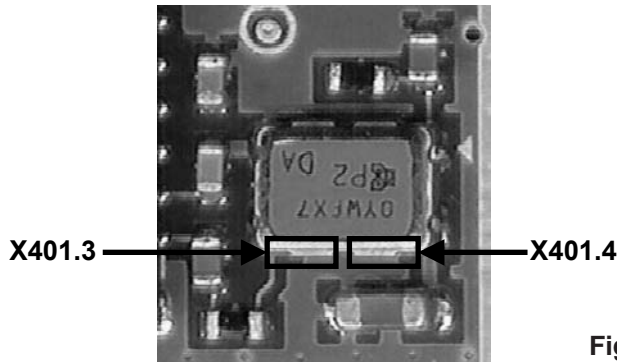
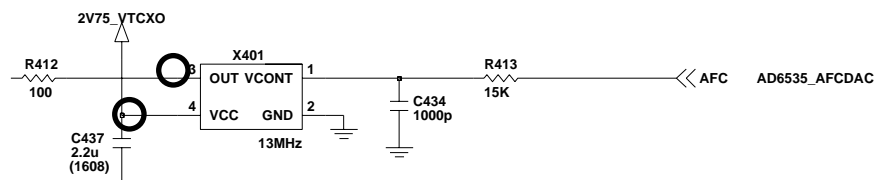
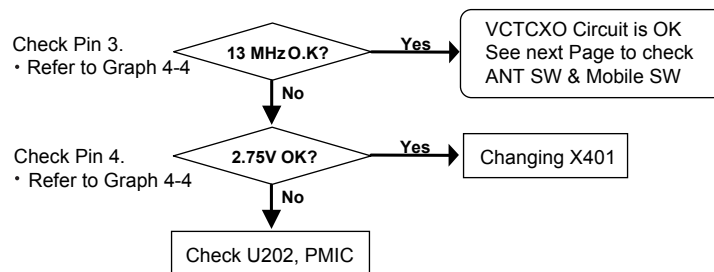
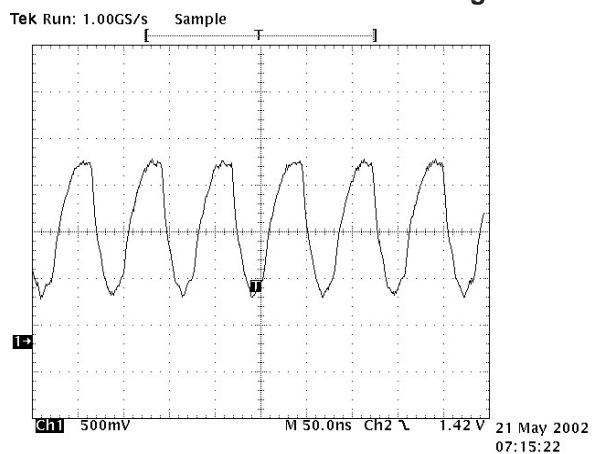


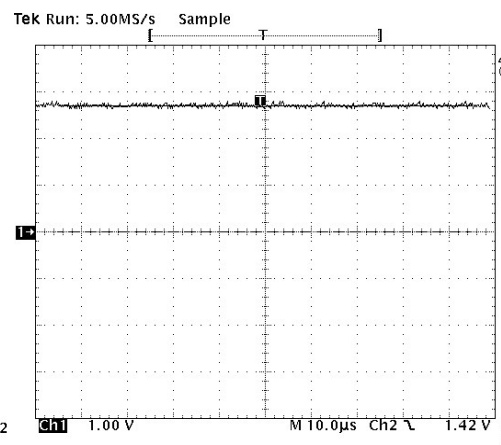
Figure 4-4



Circuit Diagram 4-2



Graph 4-2



Graph 4-3

## 4. TROUBLE SHOOTING

### 4.2.3 Checking Transceiver Control Signal

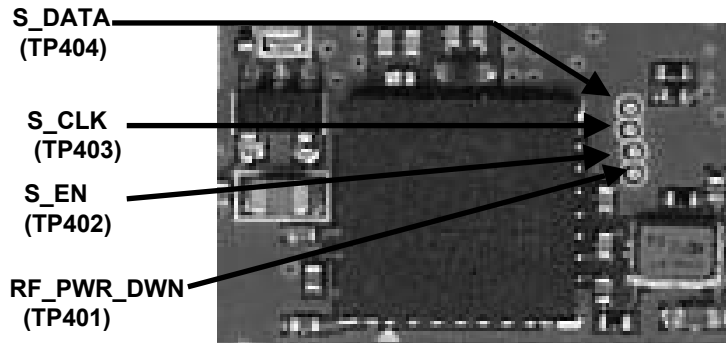
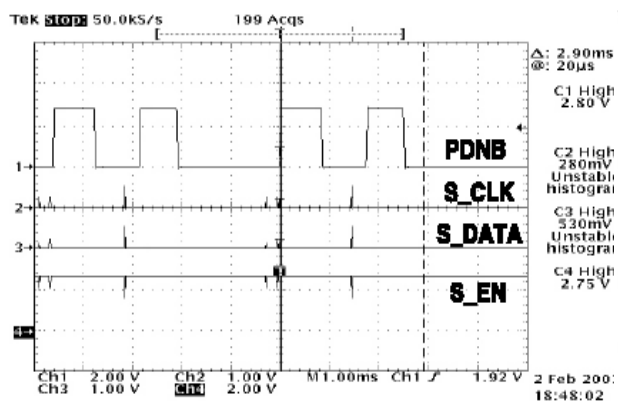
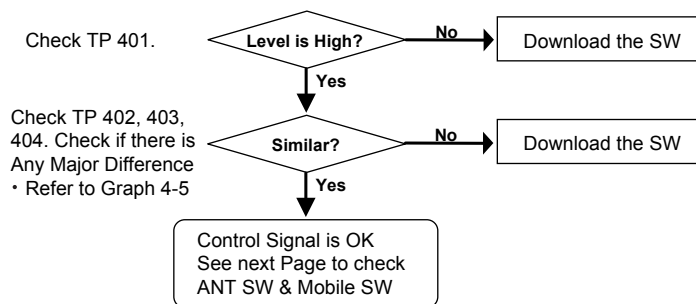
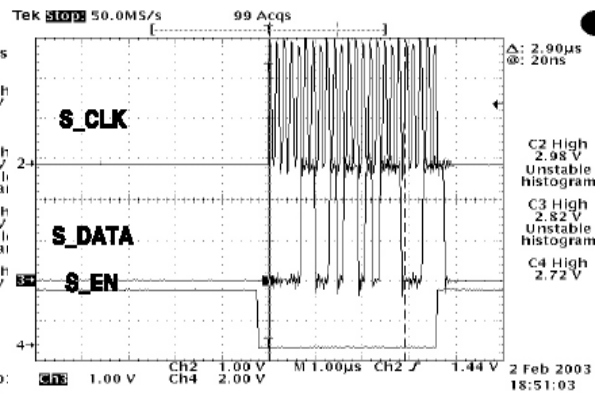


Figure 4-5



Graph 4-4



Graph 4-5

## 4.2.4 Checking Antenna Switch &amp; Mobile Switch

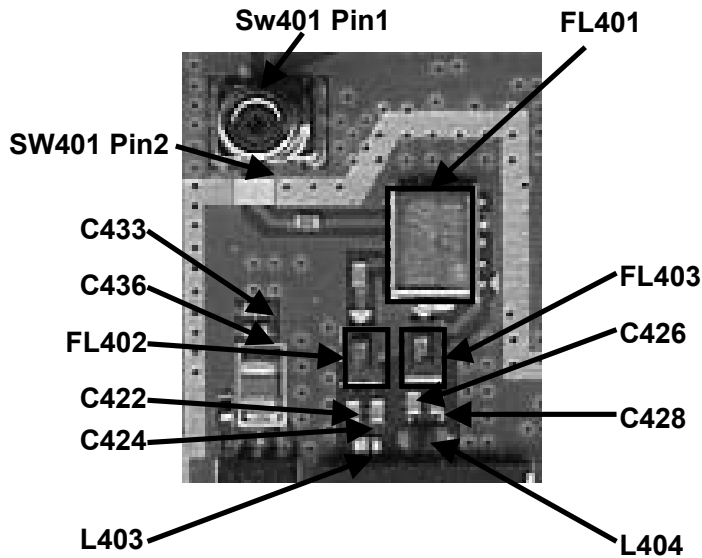
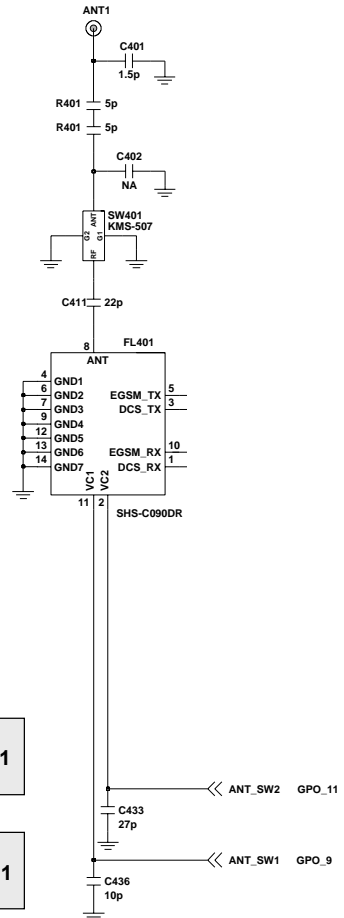


figure 4-6



Circuit Diagram 4-3

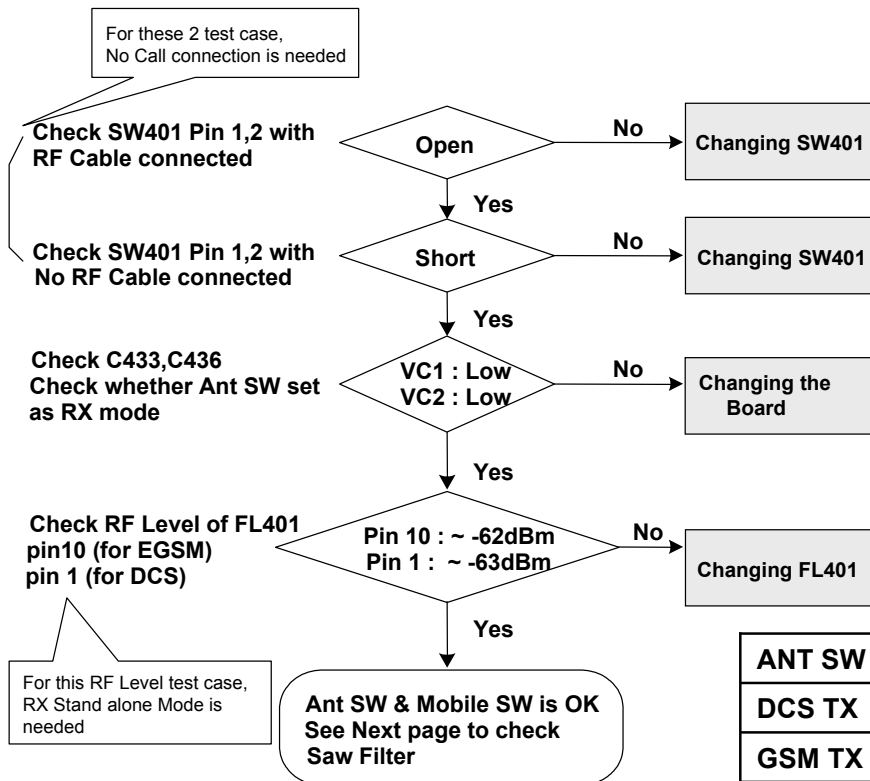
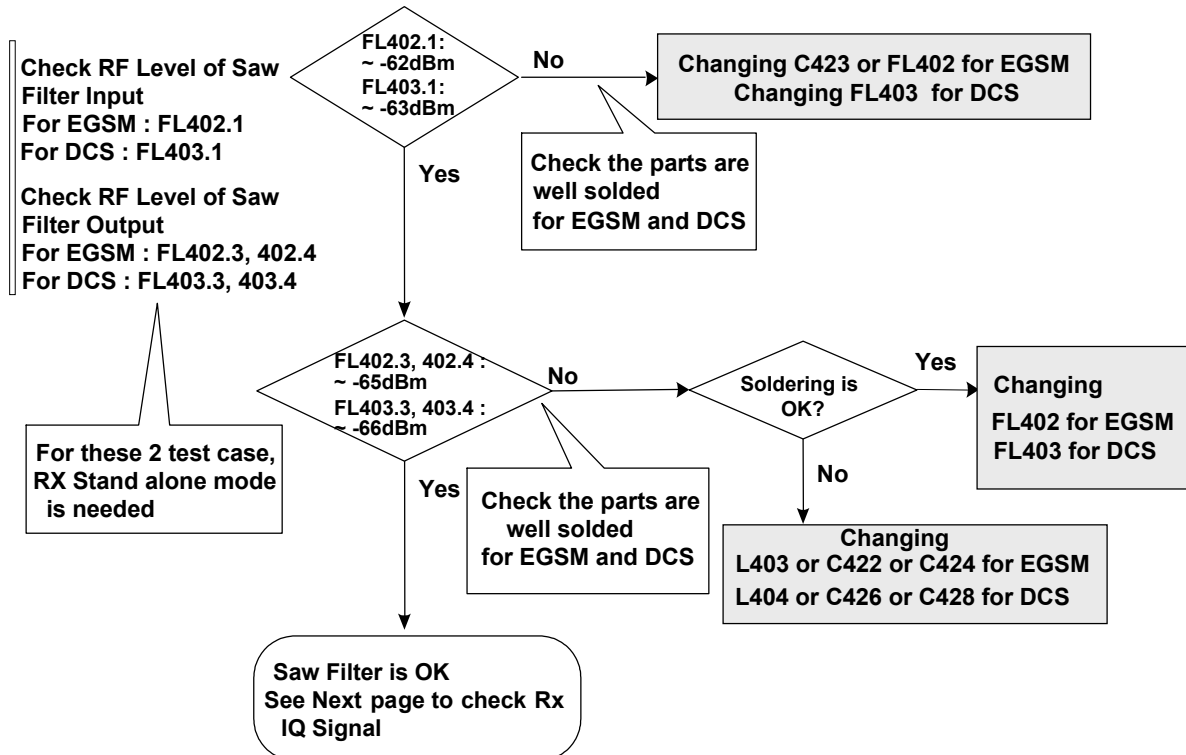
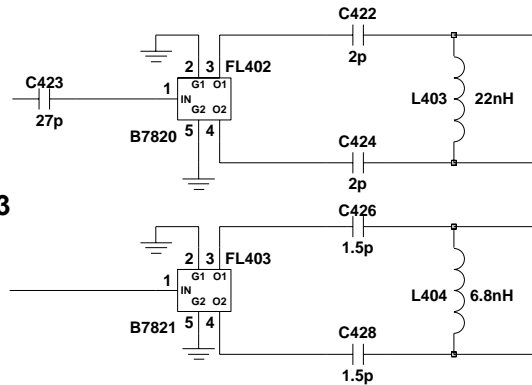
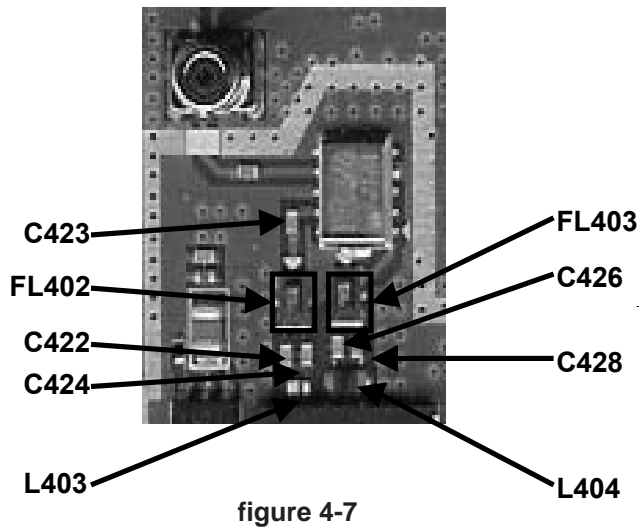


Table 4-2

ANT SW	VC1	VC2
DCS TX	L	H
GSM TX	H	L
EGSM,DCS RX	L	L

## 4. TROUBLE SHOOTING

### 4.2.5 Checking SAW Filter



### 4.2.6 Checking RX IQ

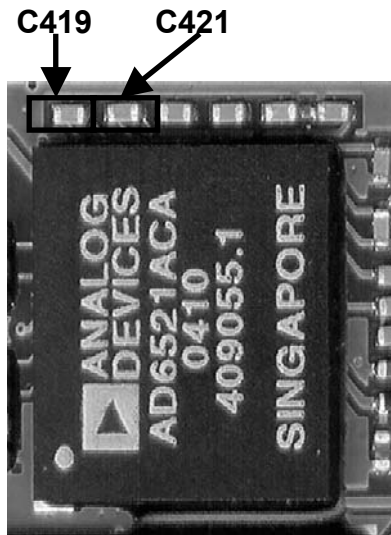
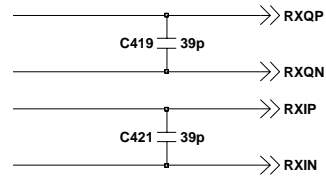
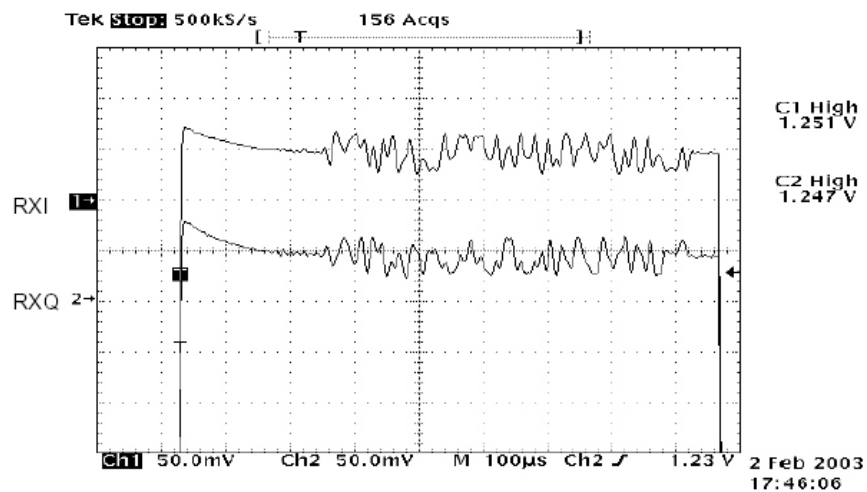
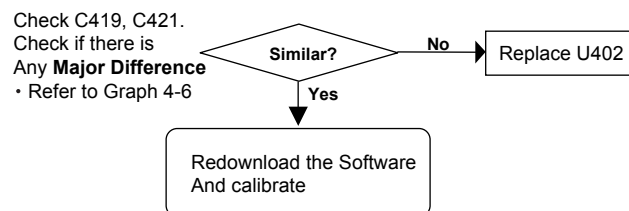


figure 4-8



Circuit Diagram 4-5



Graph 4-6



## 4. TROUBLE SHOOTING

### 4.3 TX Trouble

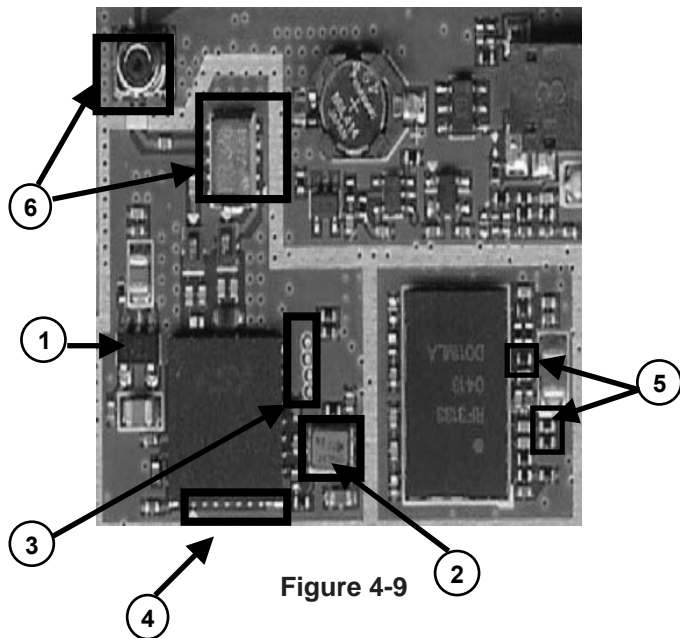
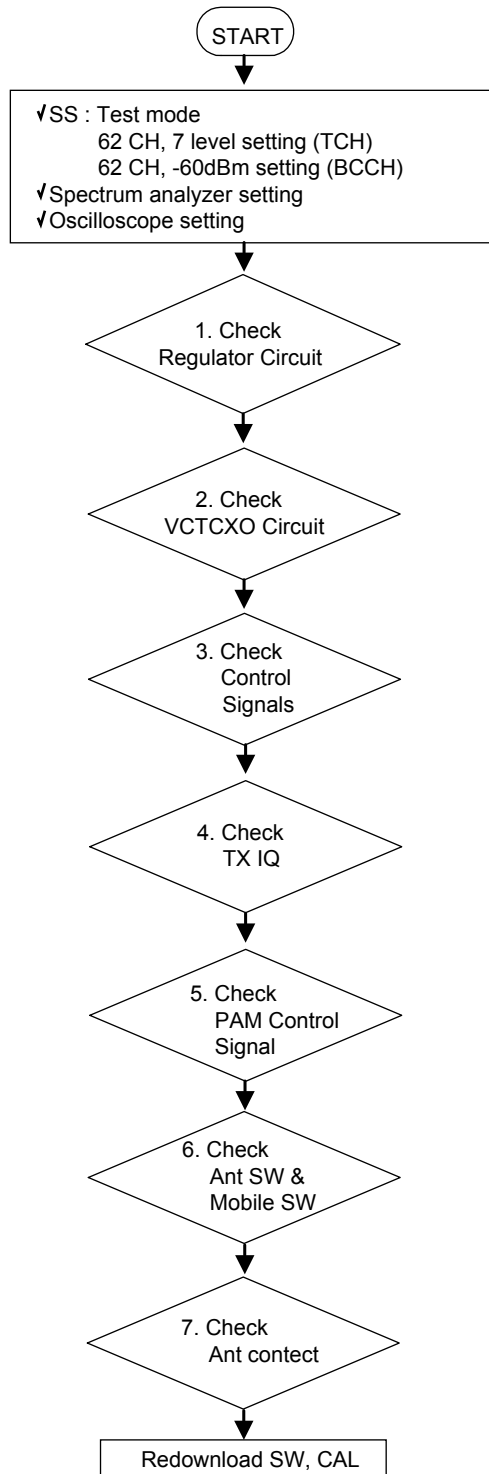
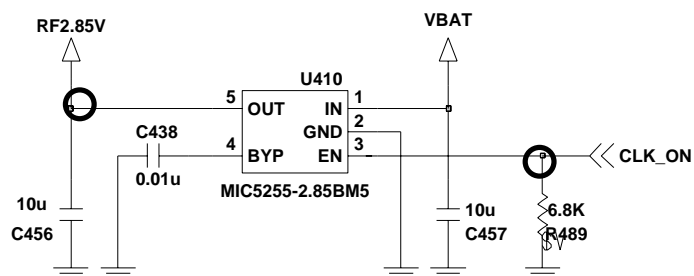
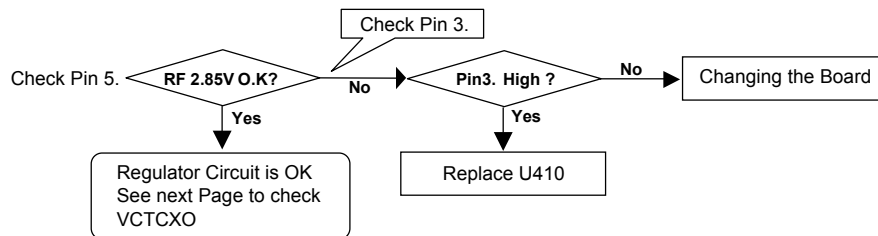
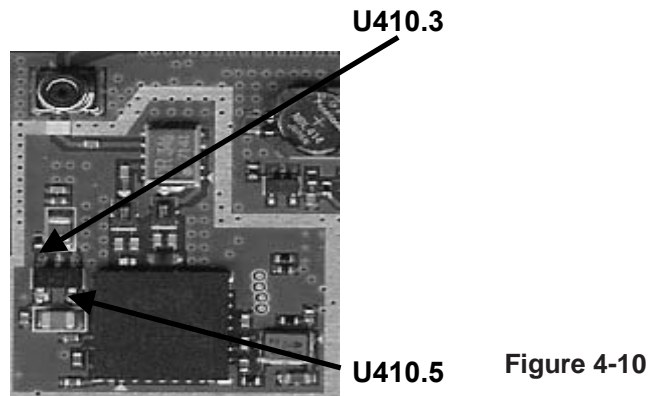
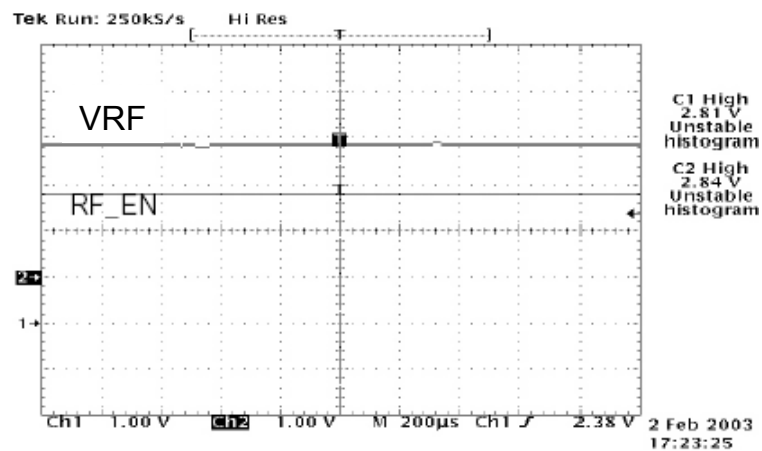


Figure 4-9

### 4.3.1 Checking Regulator Circuit



Circuit Diagram 4-6



Graph 4-7

## 4. TROUBLE SHOOTING

### 4.3.2 Checking VCTCXO Circuit

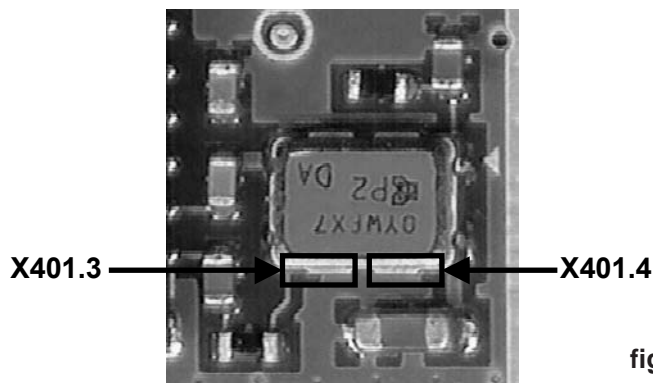
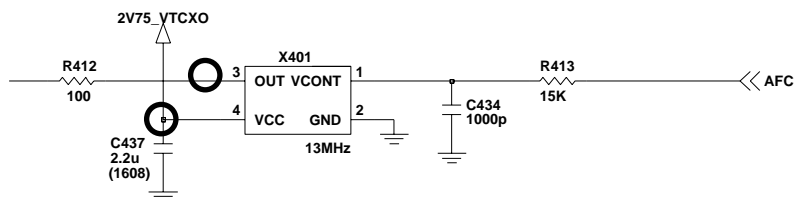
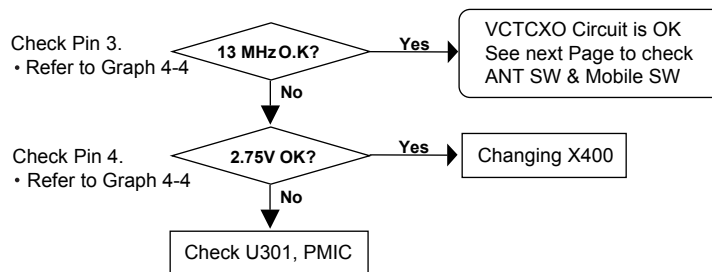
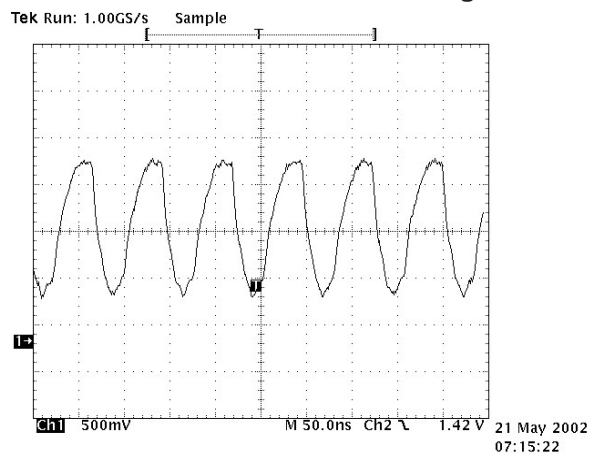


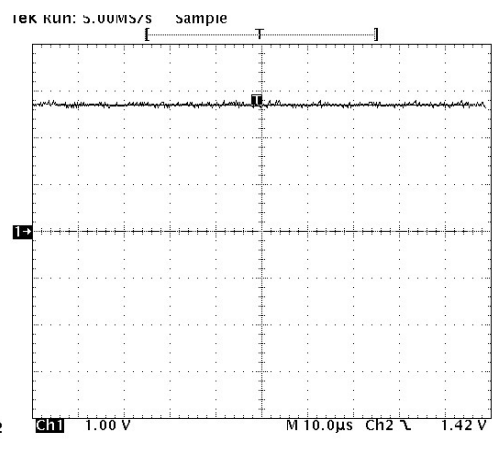
figure 4-11



Circuit Diagram 4-7



Graph 4-8



Graph 4-9

## 4.3.3 Checking PLL Control Signal

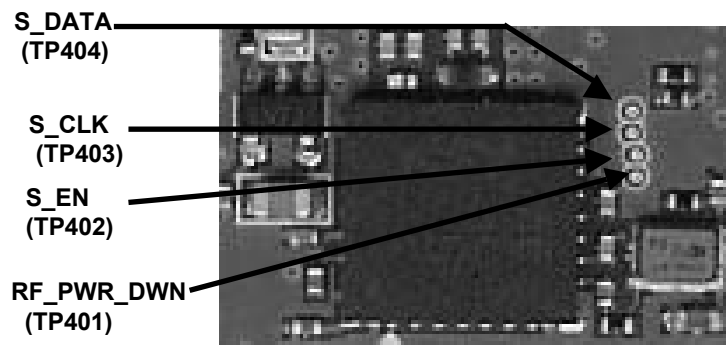
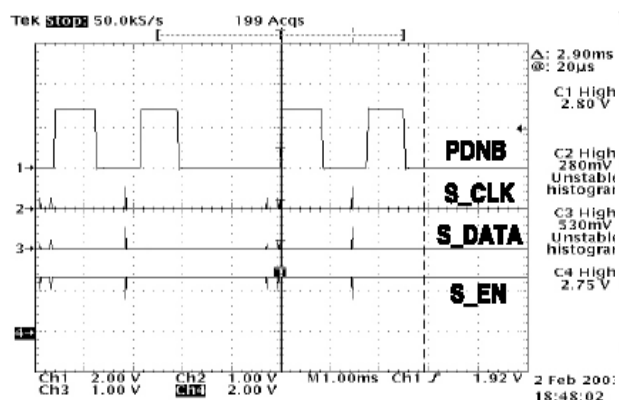
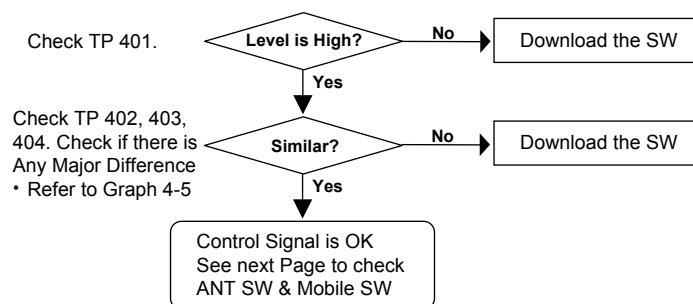
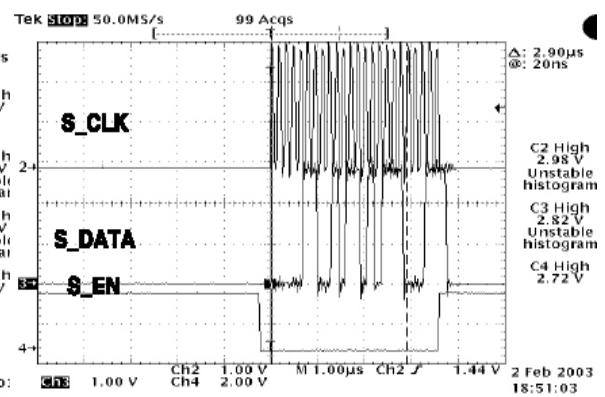


figure 4-12



Graph 4-10



Graph 4-11

## 4. TROUBLE SHOOTING

### 4.3.4 Checking TX IQ

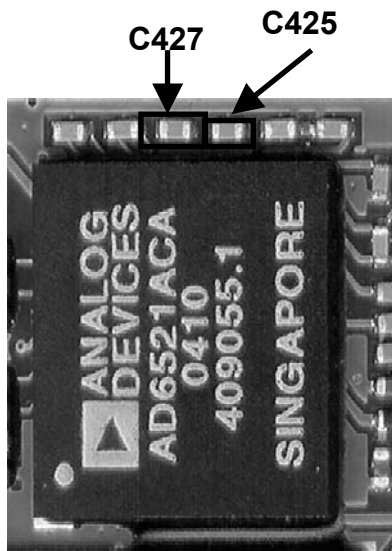
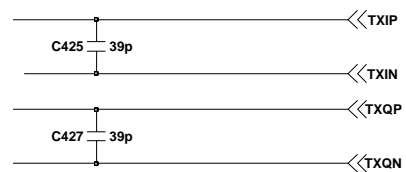
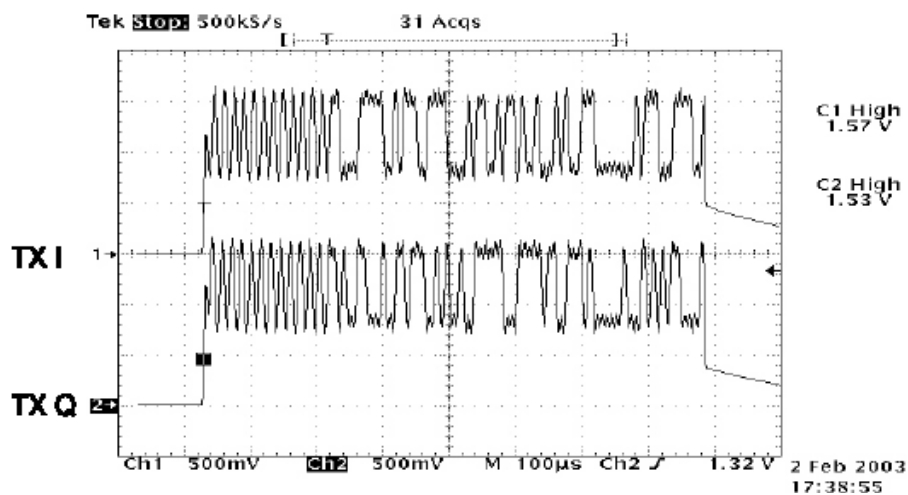
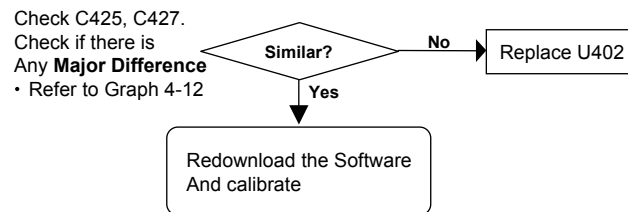


figure 4-13



Circuit Diagram 4-8



Graph 4-12

## 4.3.5 Checking PAM Control Signal

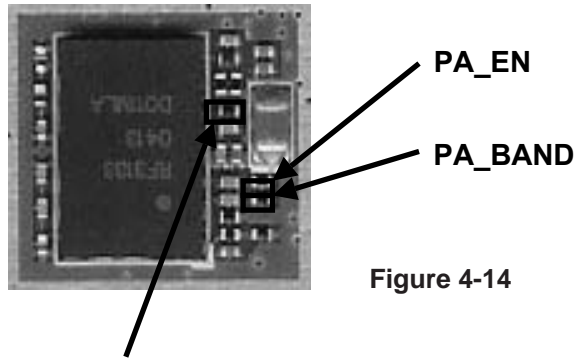
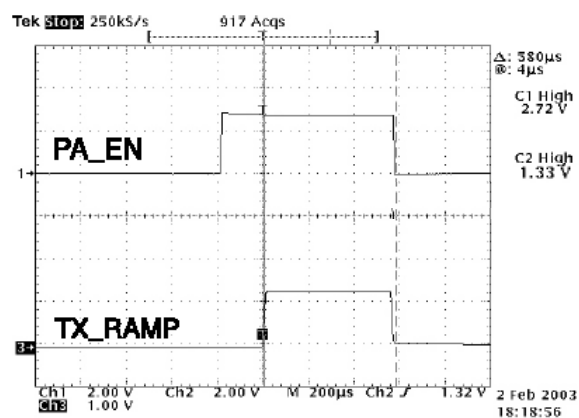
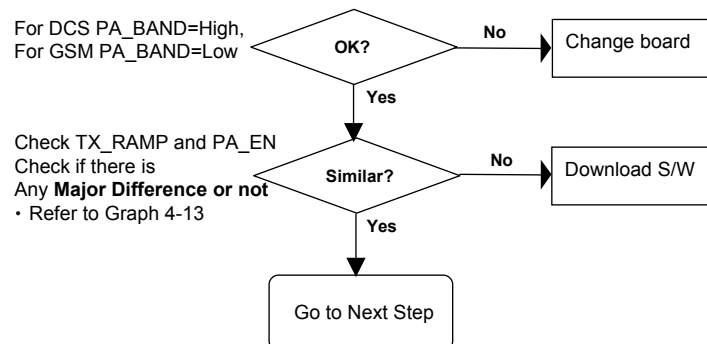


Figure 4-14

TX\_RAMP



Graph 4-13

## 4. TROUBLE SHOOTING

### 4.3.6 Checking Antenna Switch & Mobile Switch

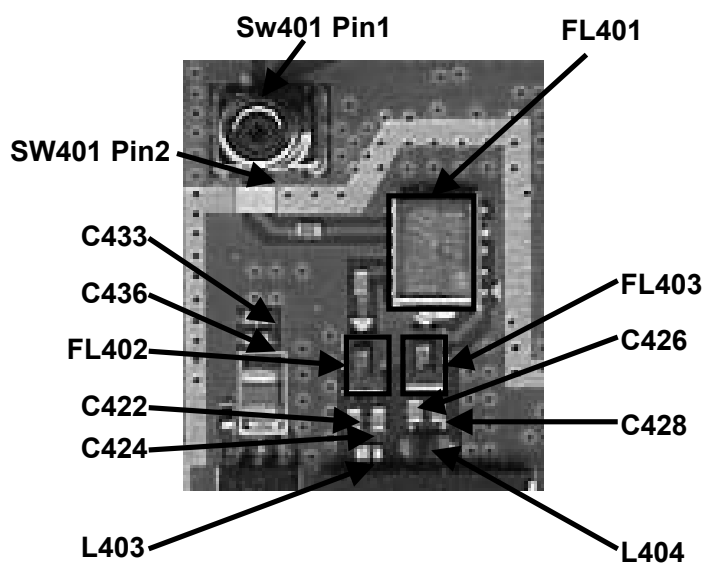
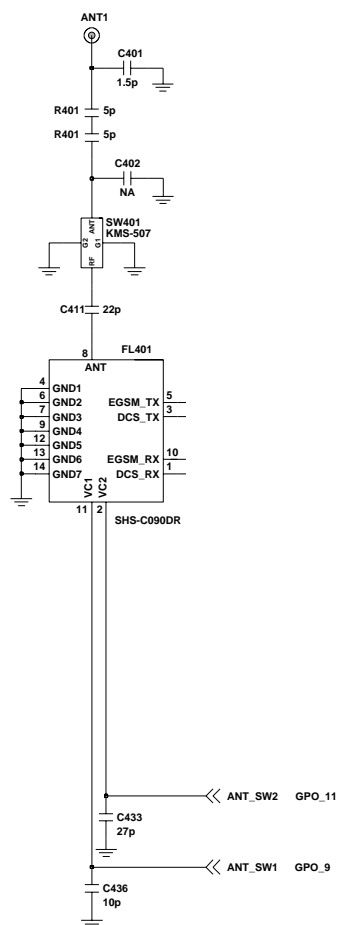


figure 4-15



Circuit Diagram 4-9

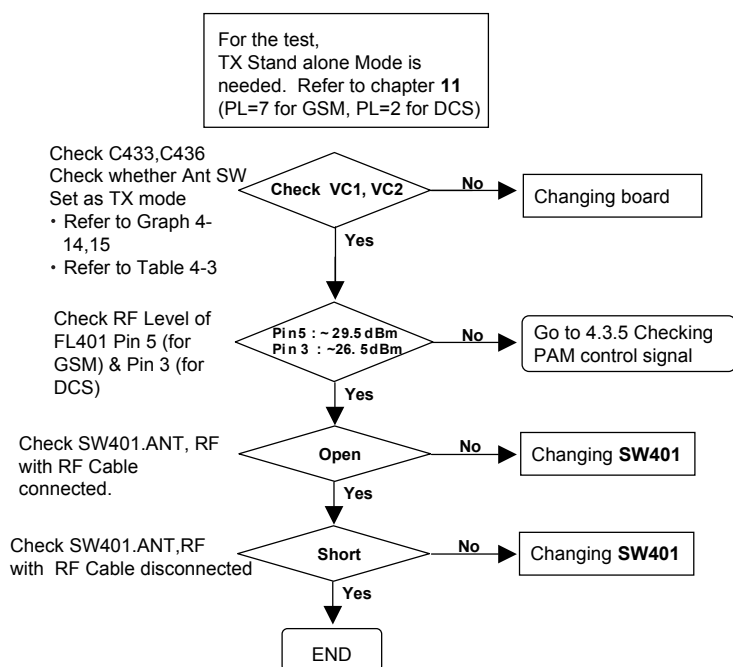
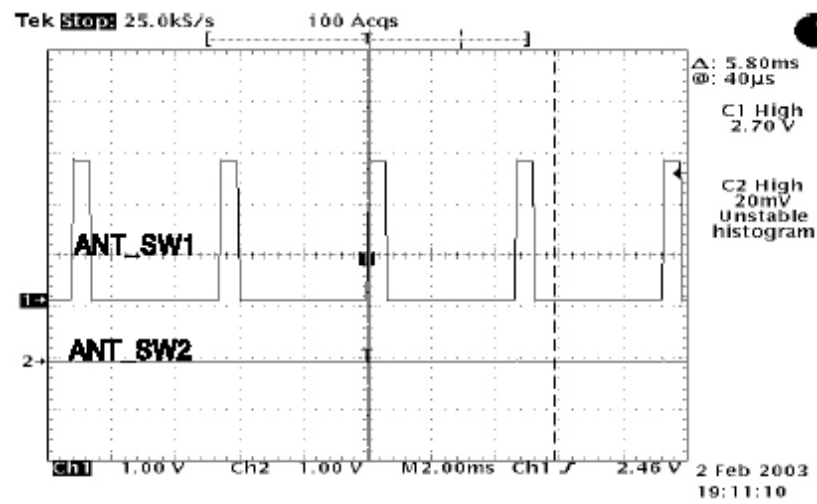
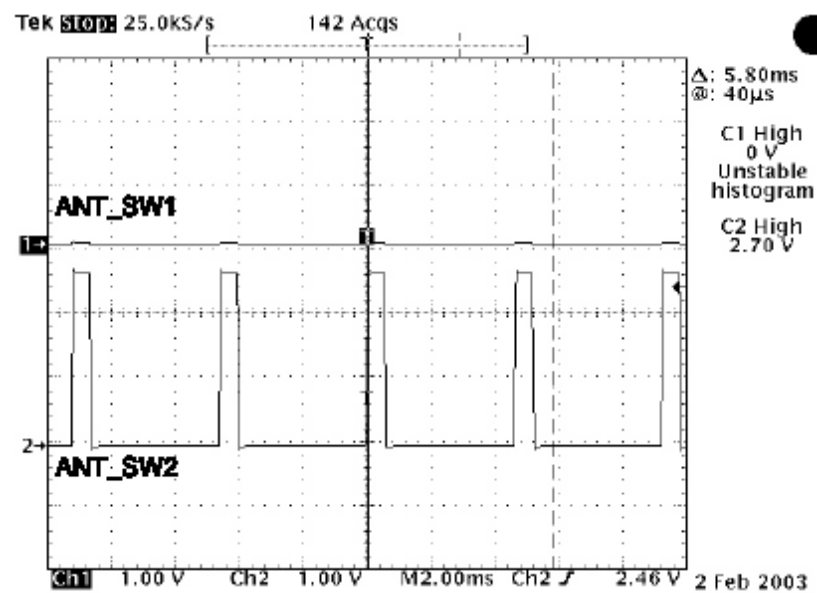


Table 4-3

ANT SW	VC1	VC2
DCS TX	L	H
GSM TX	H	L
EGSM, DCS RX	L	L



Graph 4-14 GSM TX



Graph 4-15 DCS TX



## 4. TROUBLE SHOOTING

### 4.3.7 Checking Antenna Contact

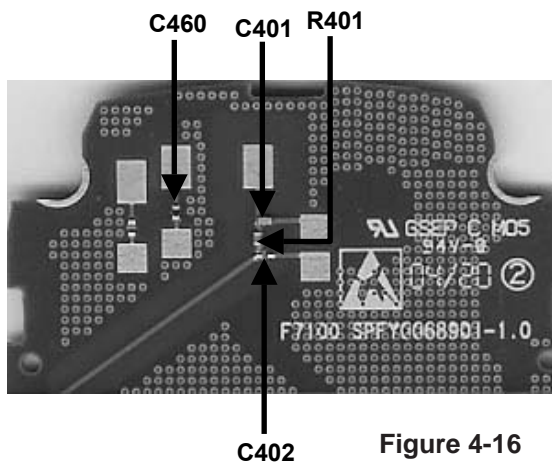
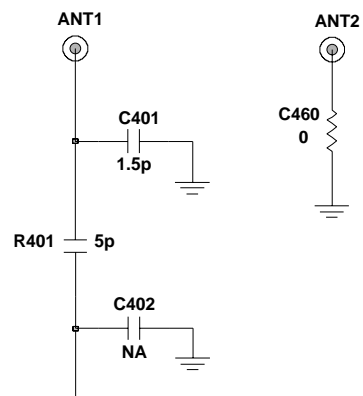
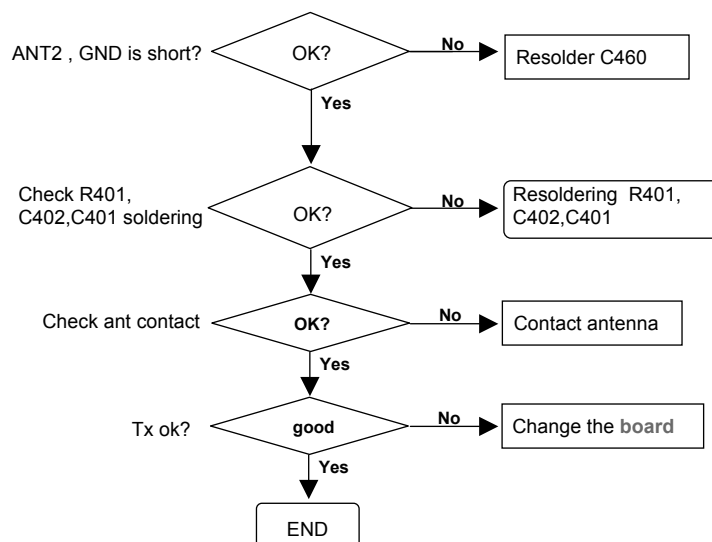


Figure 4-16

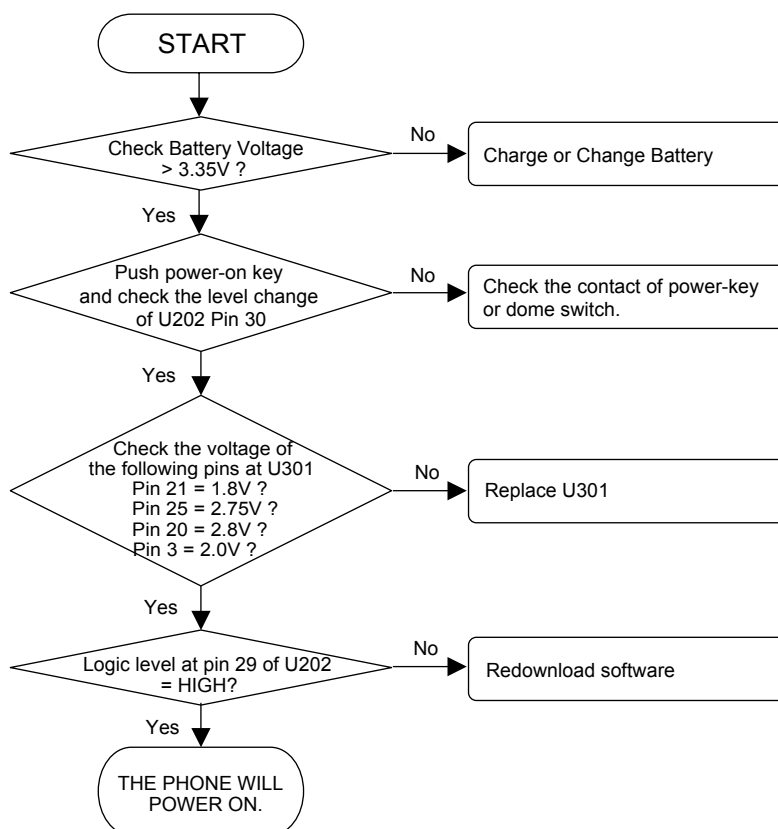


Circuit Diagram 4-10



## 4.4 Power On Trouble

SETTING: Connect PIF, and set remote switch off at PIF  
\* Refer to Figure 4-17



## 4. TROUBLE SHOOTING

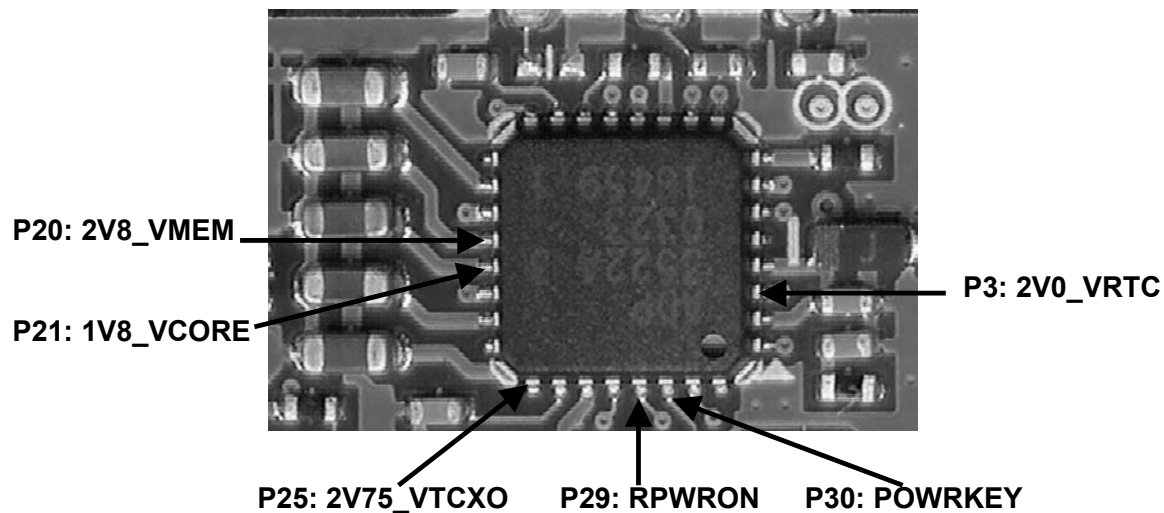
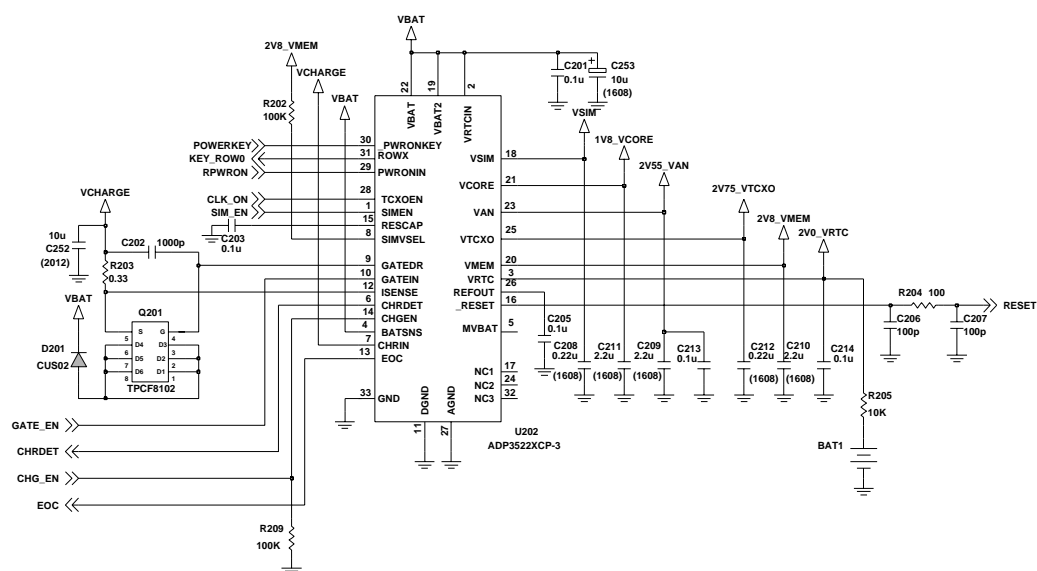


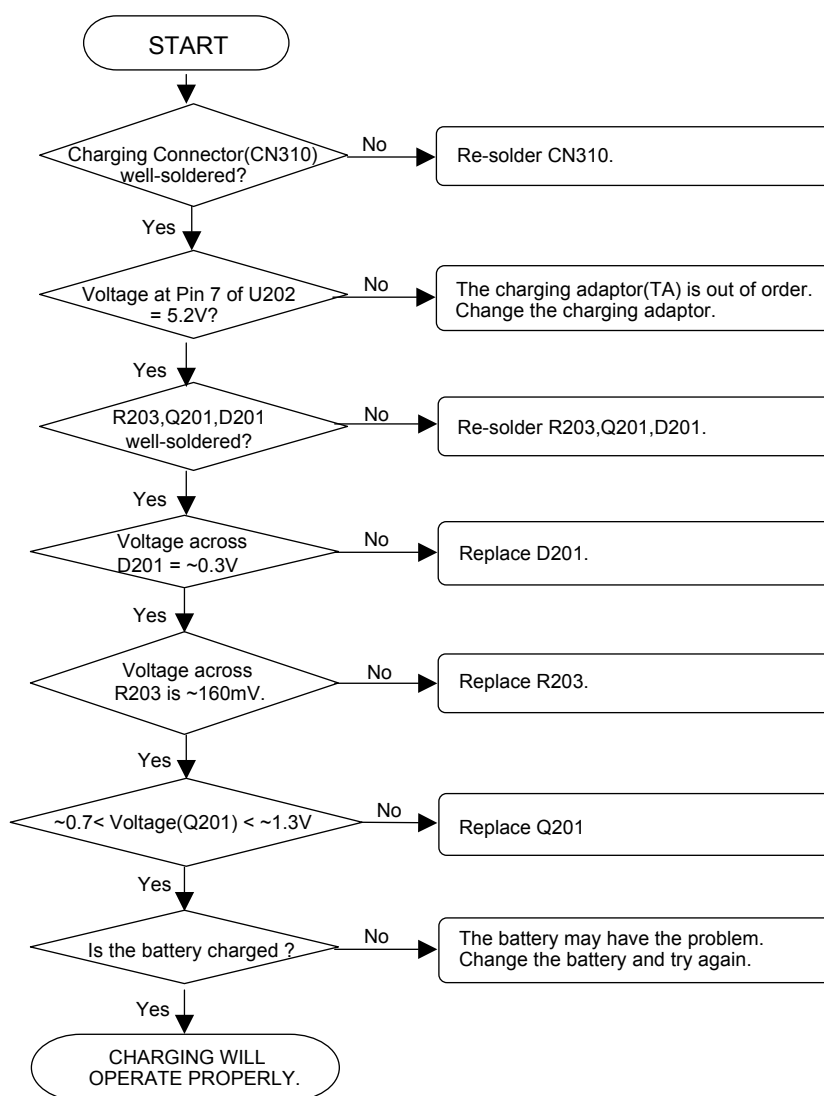
Figure 4-17



Circuit Diagram 4-11

## 4.5 Charging Trouble

SETTING: Connect the battery (3.4 ~ 4V) and the charging adaptor(TA) to the phone



## 4. TROUBLE SHOOTING

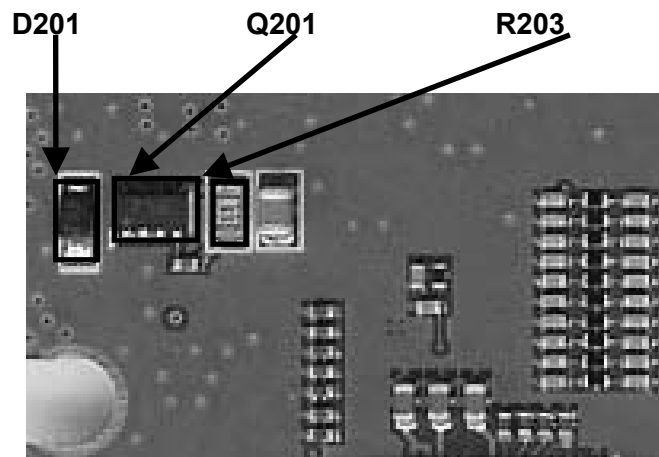
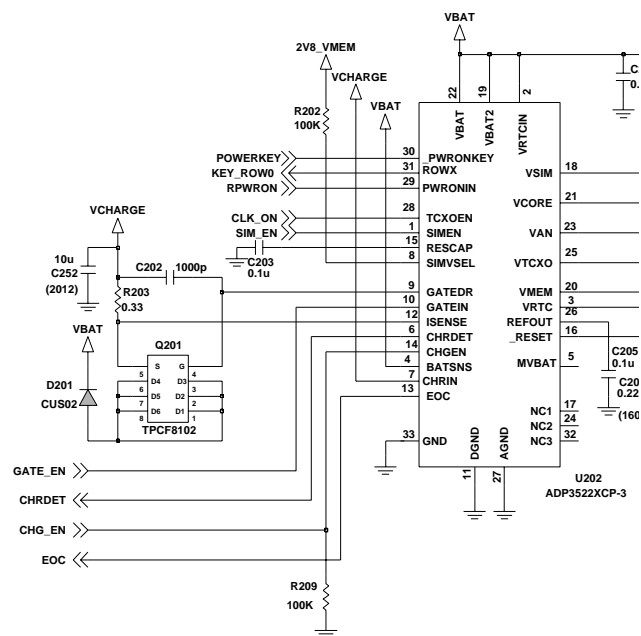
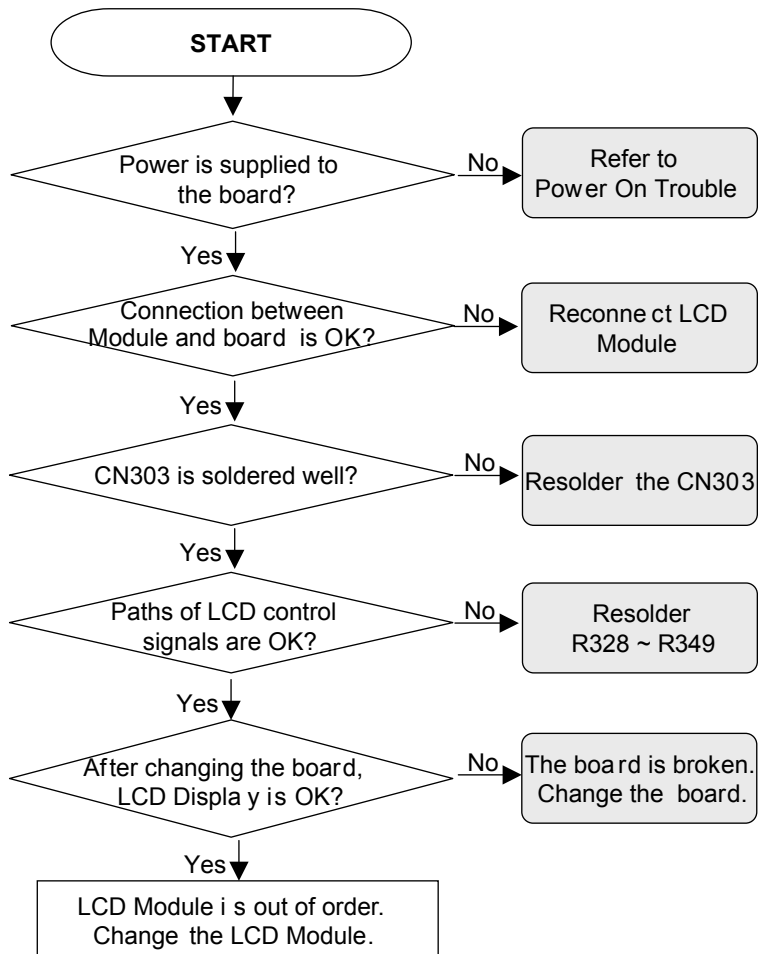


Figure 4-18



Circuit Diagram 4-12

## 4.6 LCD Trouble



## 4. TROUBLE SHOOTING

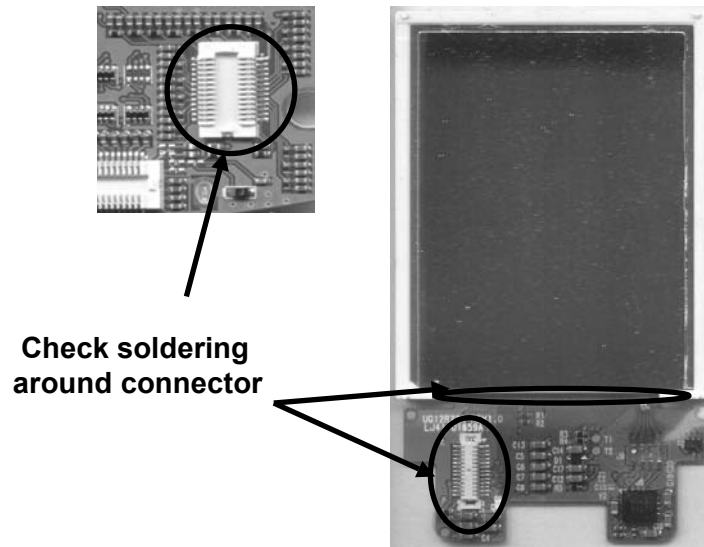


Figure 4-19

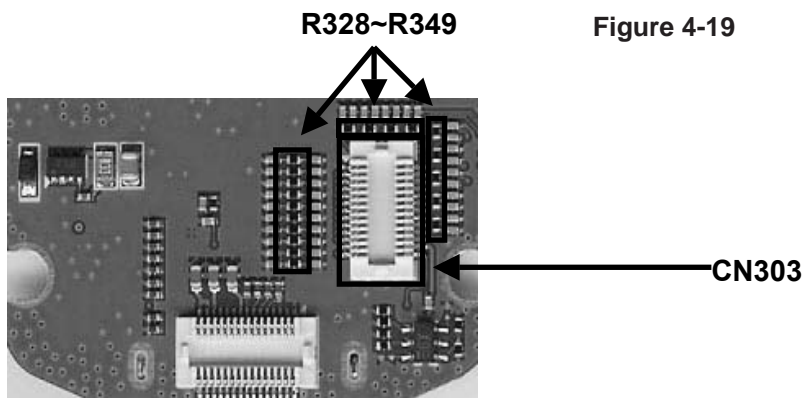
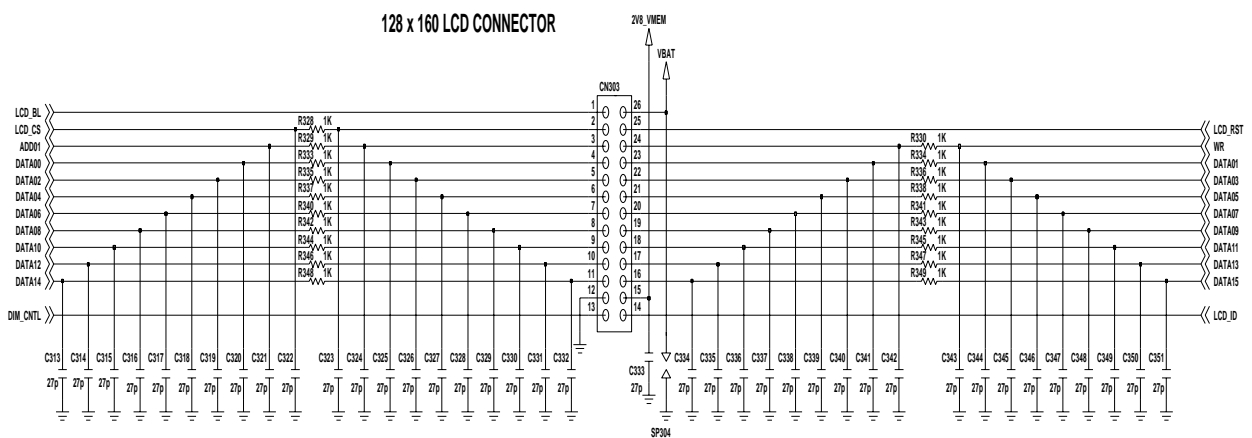


Figure 4-20



Circuit Diagram 4-13

### 4.7 Receiver Trouble

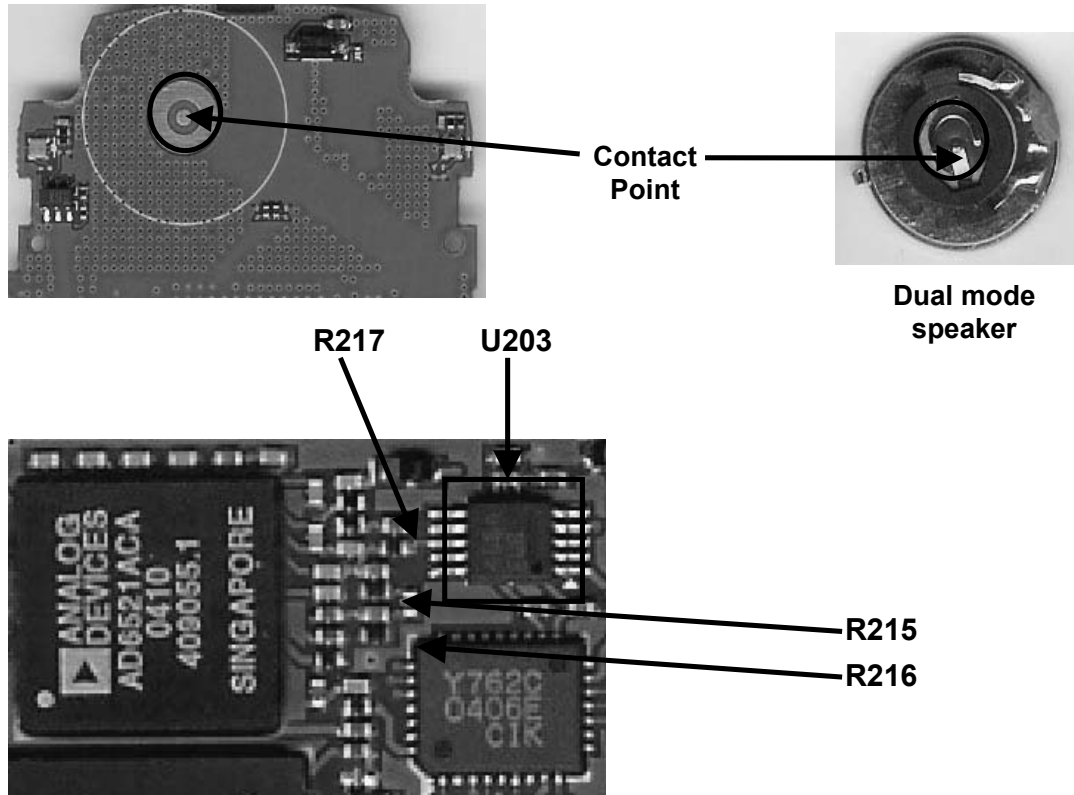
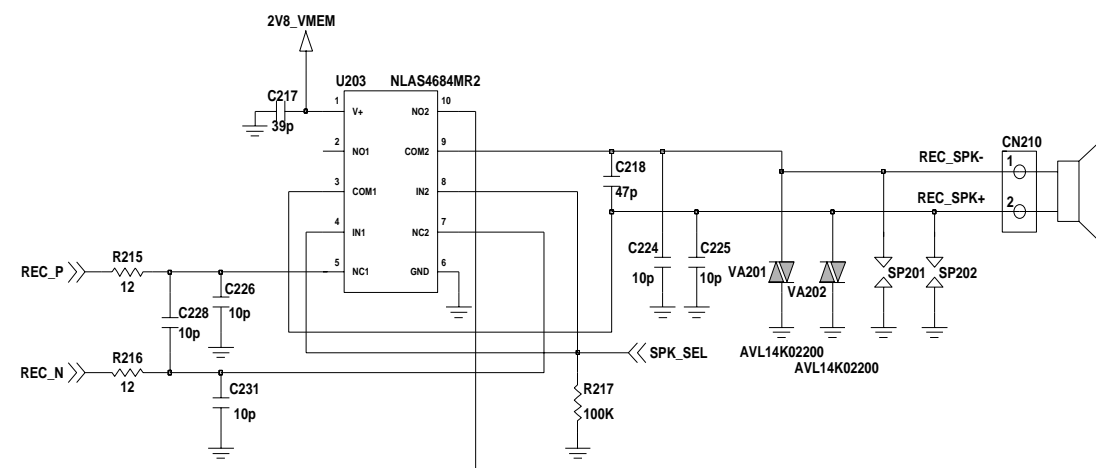


Figure 4-21

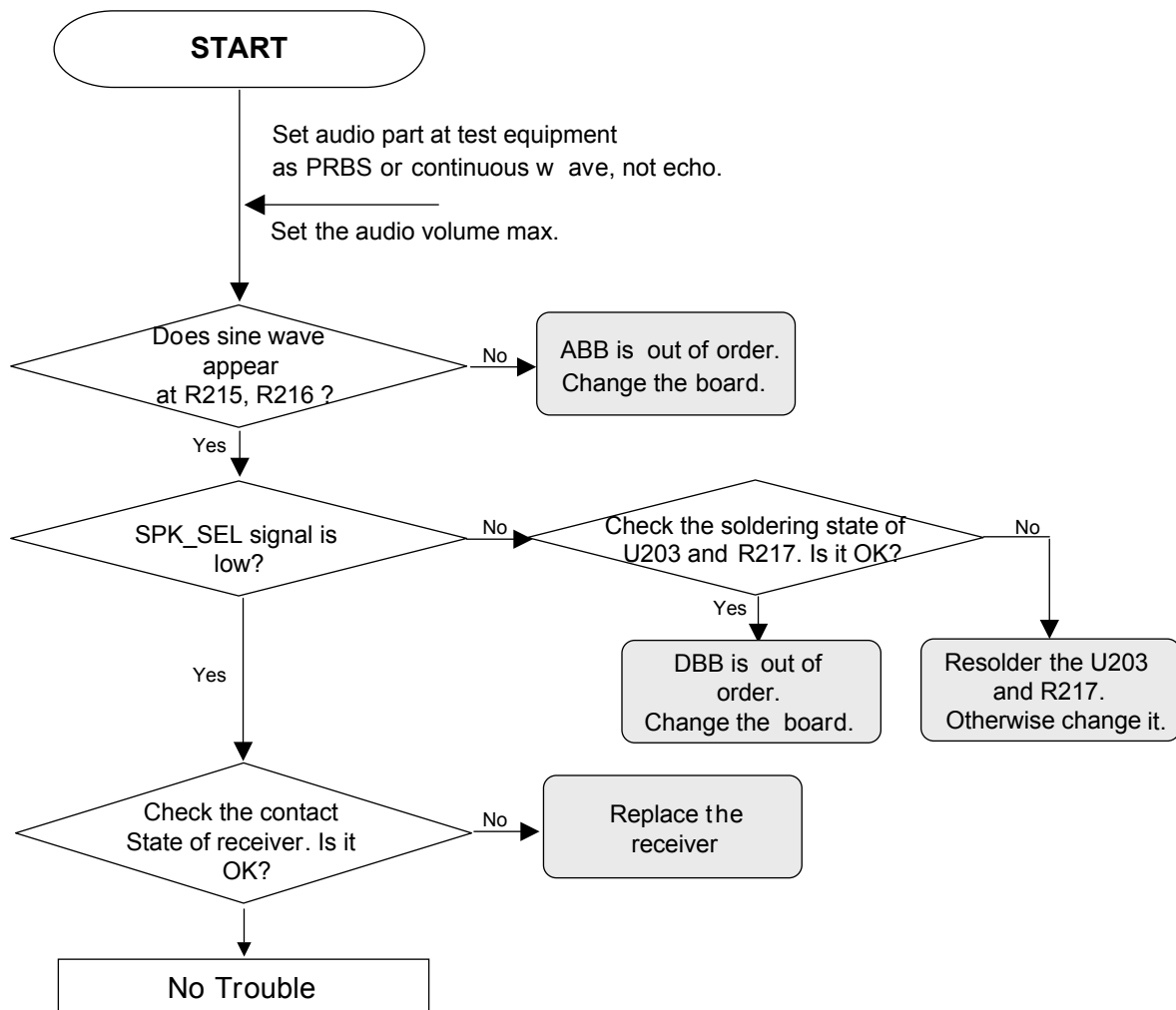


Circuit Diagram 4-14



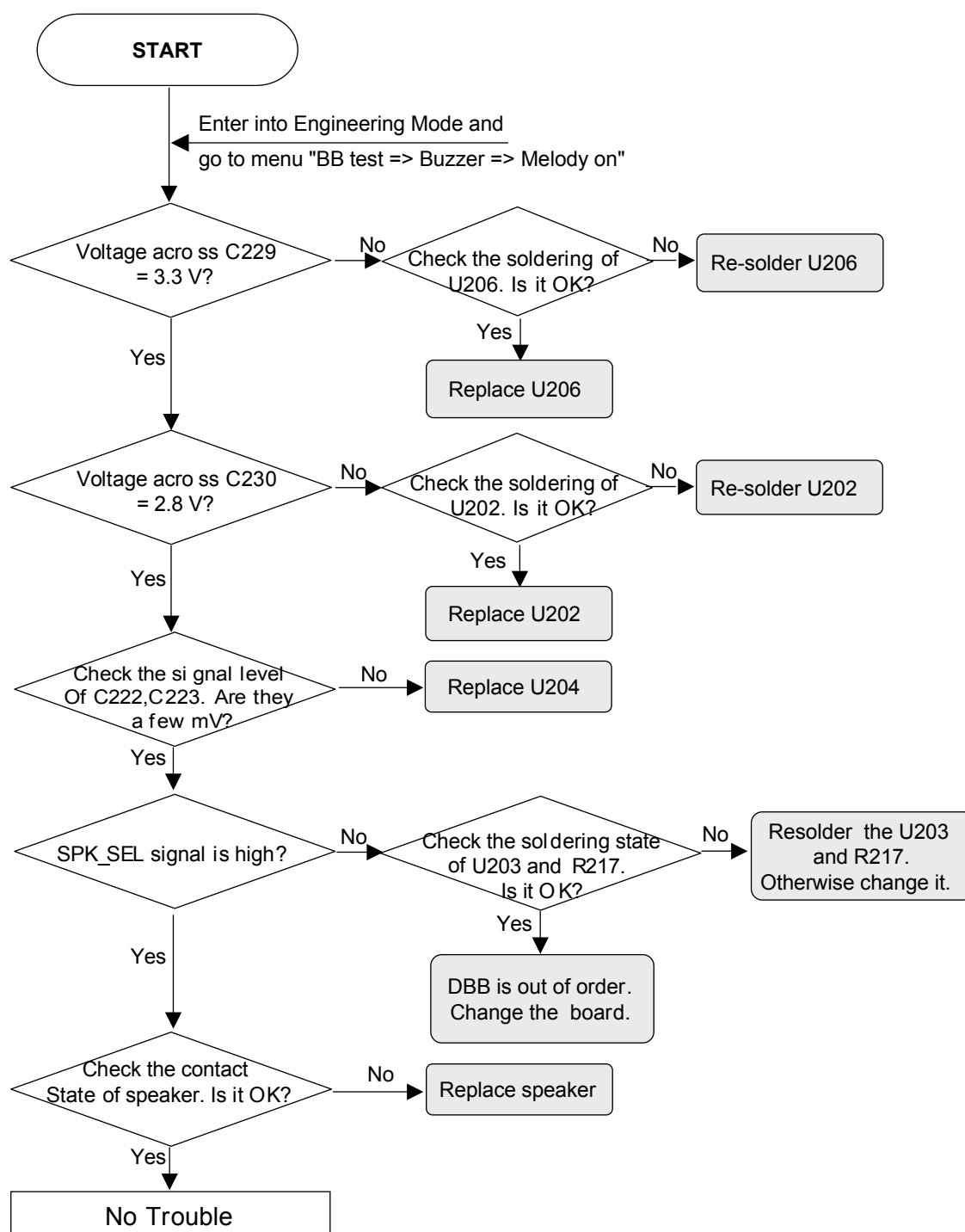
## 4. TROUBLE SHOOTING

---



## 4.8 Speaker Trouble

SETTING: Connect PIF to the phone, and Power on. Enter The engineering mode, and set "Melody on" at Buzzer of BB test menu



## 4. TROUBLE SHOOTING

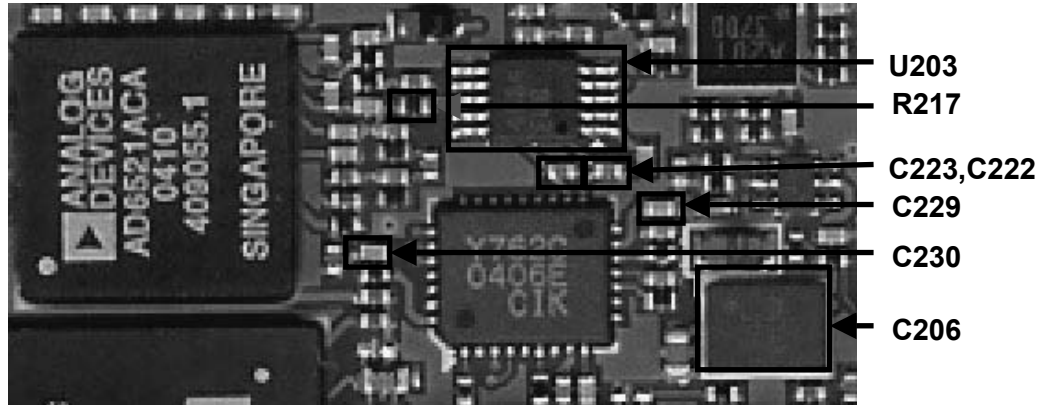


Figure 4-22

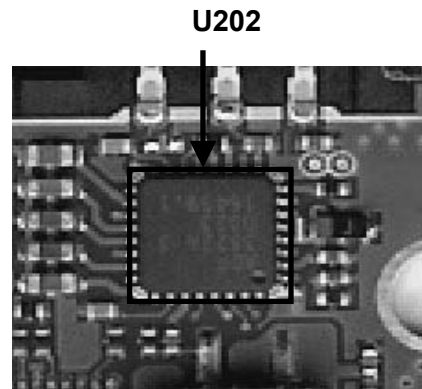
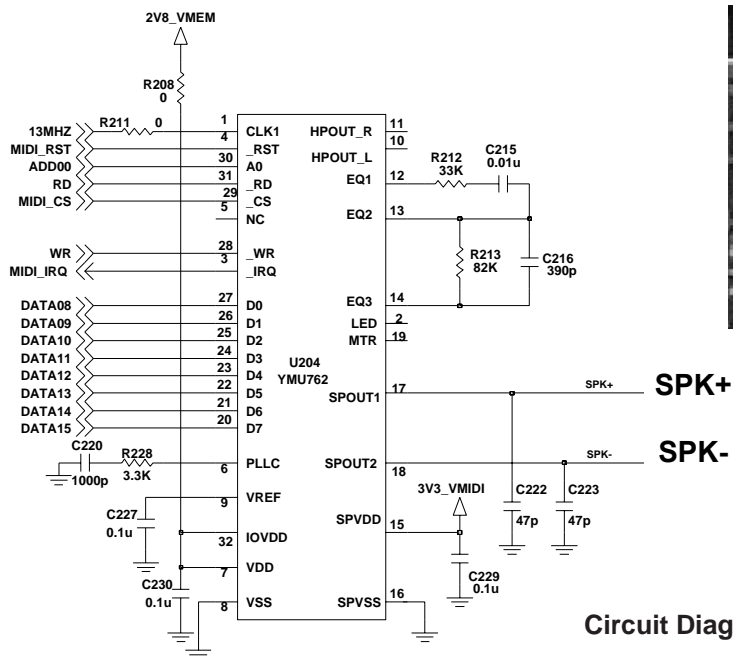
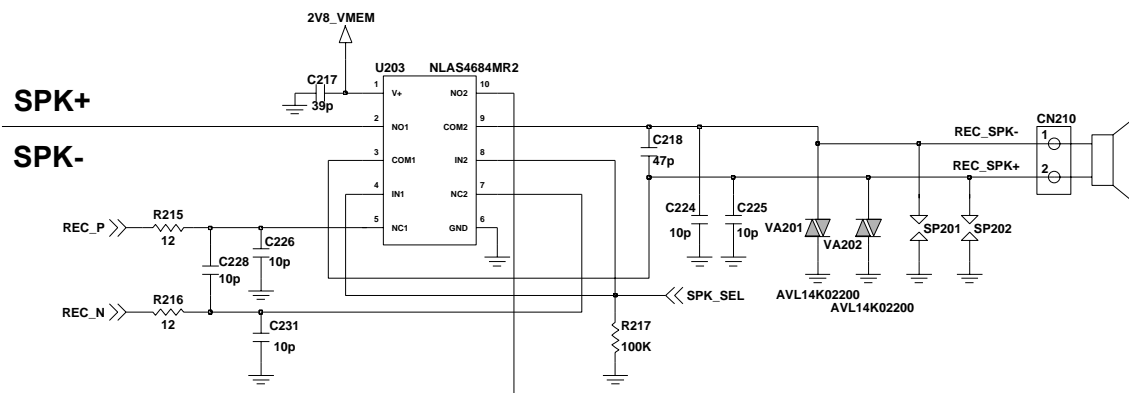
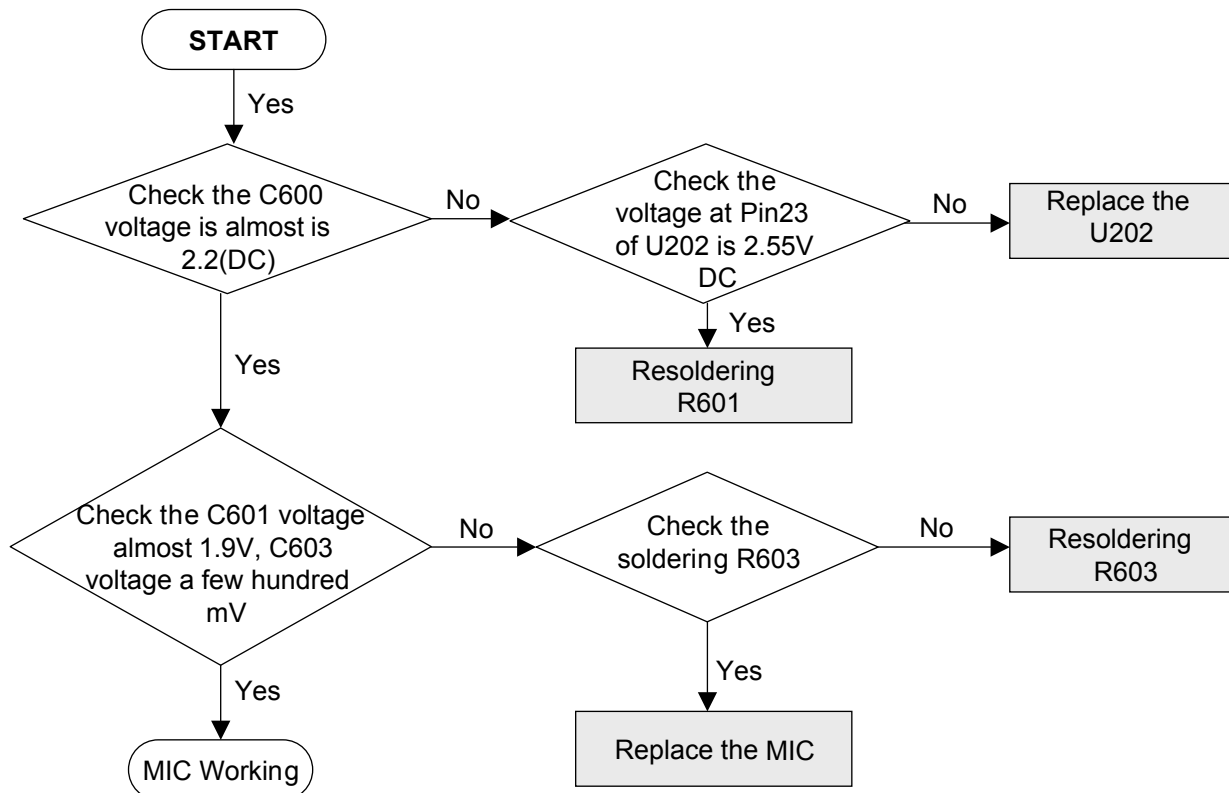
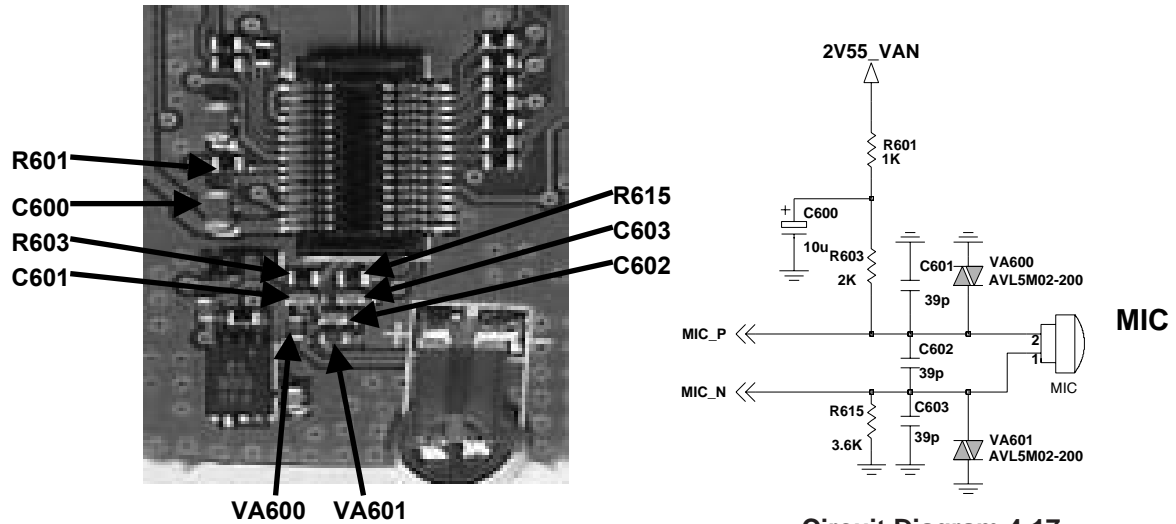


Figure 4-23



## 4.9 MIC Trouble

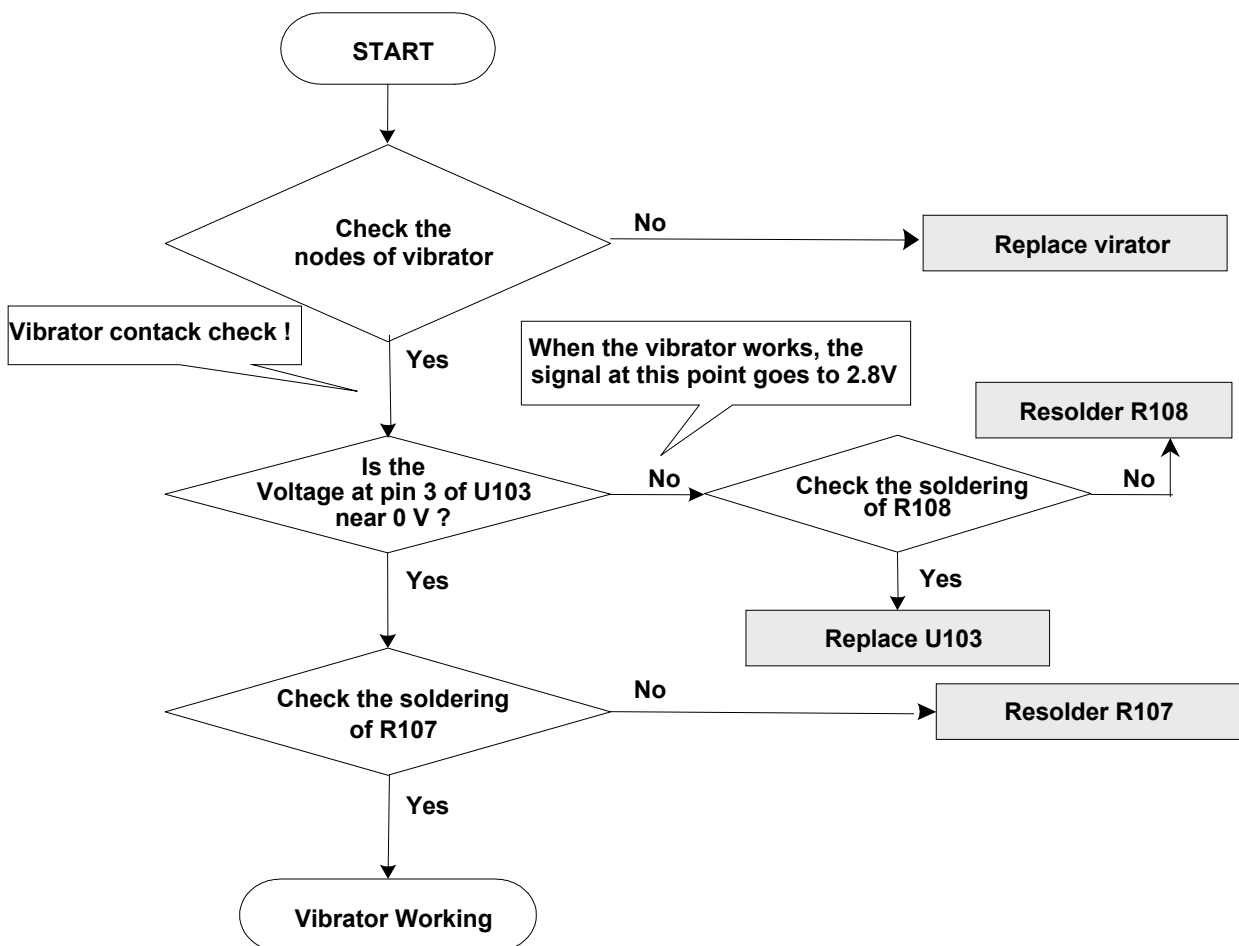


## 4. TROUBLE SHOOTING

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### 4.10 Vibrator Trouble

SETTING: Enter The engineering mode, and set “Vibrator on” at Vibration of BB test menu



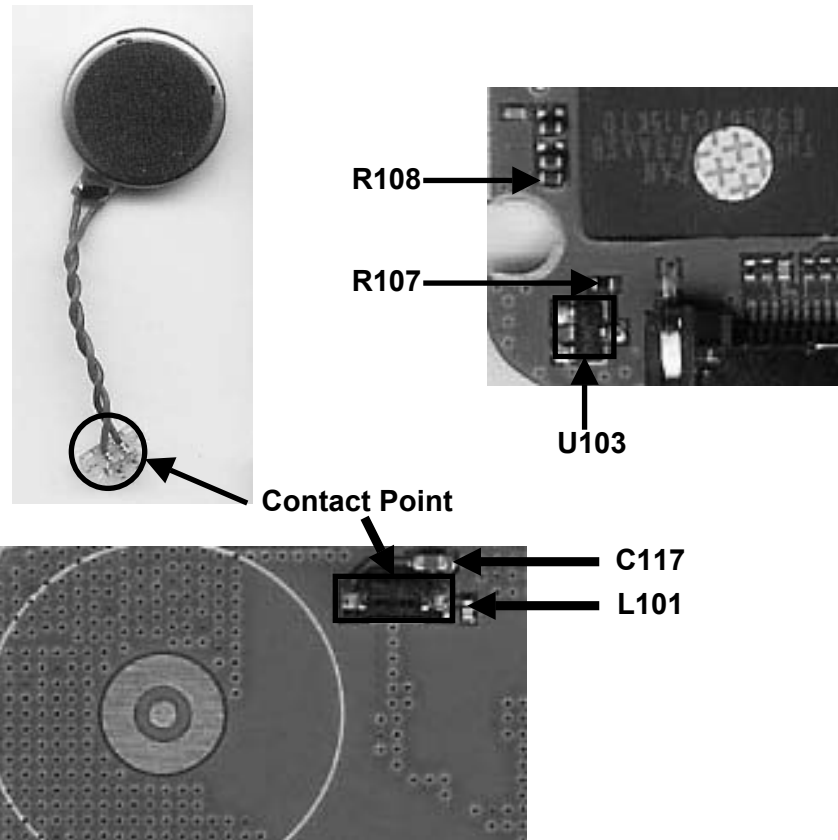
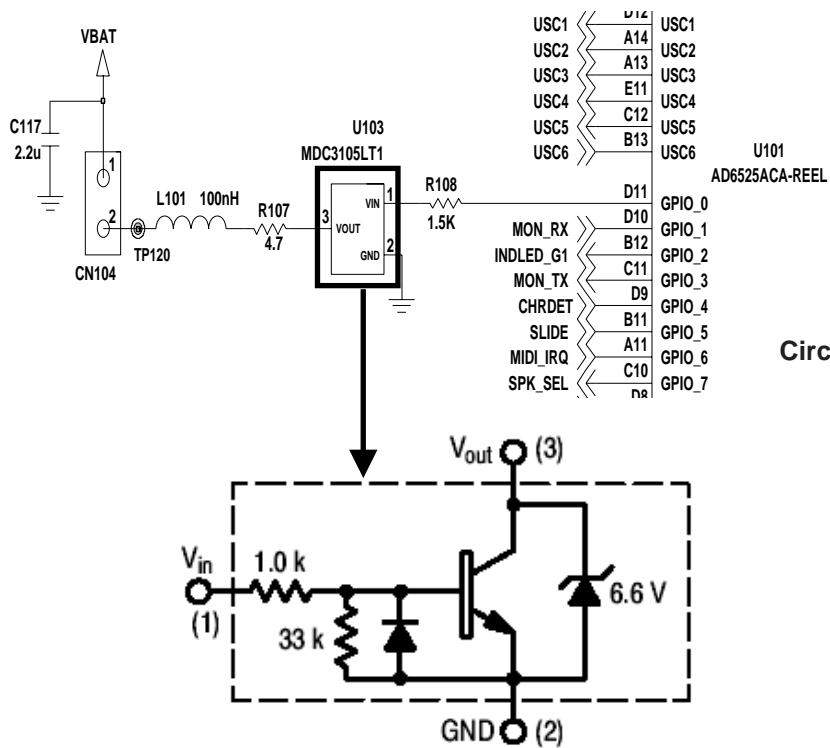


Figure 4-25



Circuit Diagram 4-18

## 4. TROUBLE SHOOTING

### 4.11 Key Backlight LED Trouble

SETTING: Connect PIF to the phone, and power on. Enter engineering mode, and set "Backlight on" at "BB test-Backlight" menu

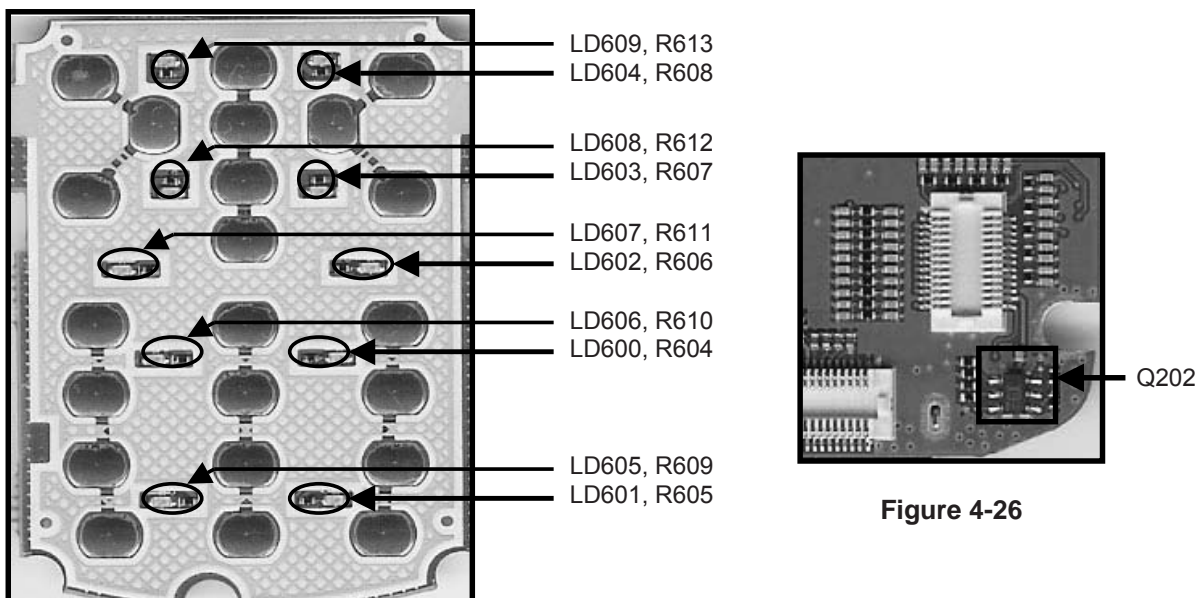
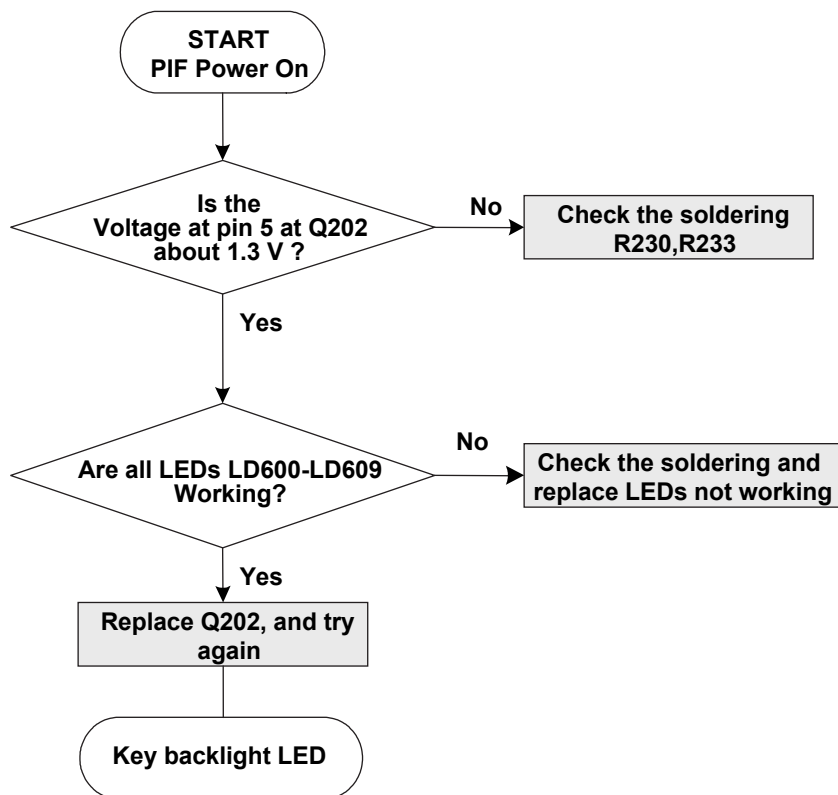


Figure 4-26

## 4.12 SIM Detect Trouble

Setting: Insert the SIM into J301. Connect PIF to the phone, and power on.

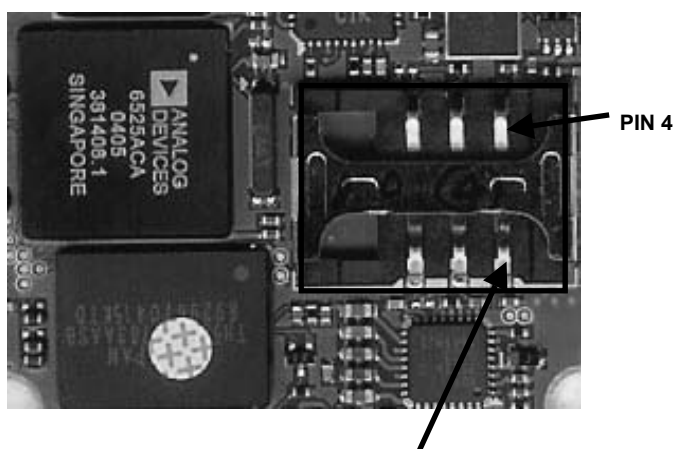
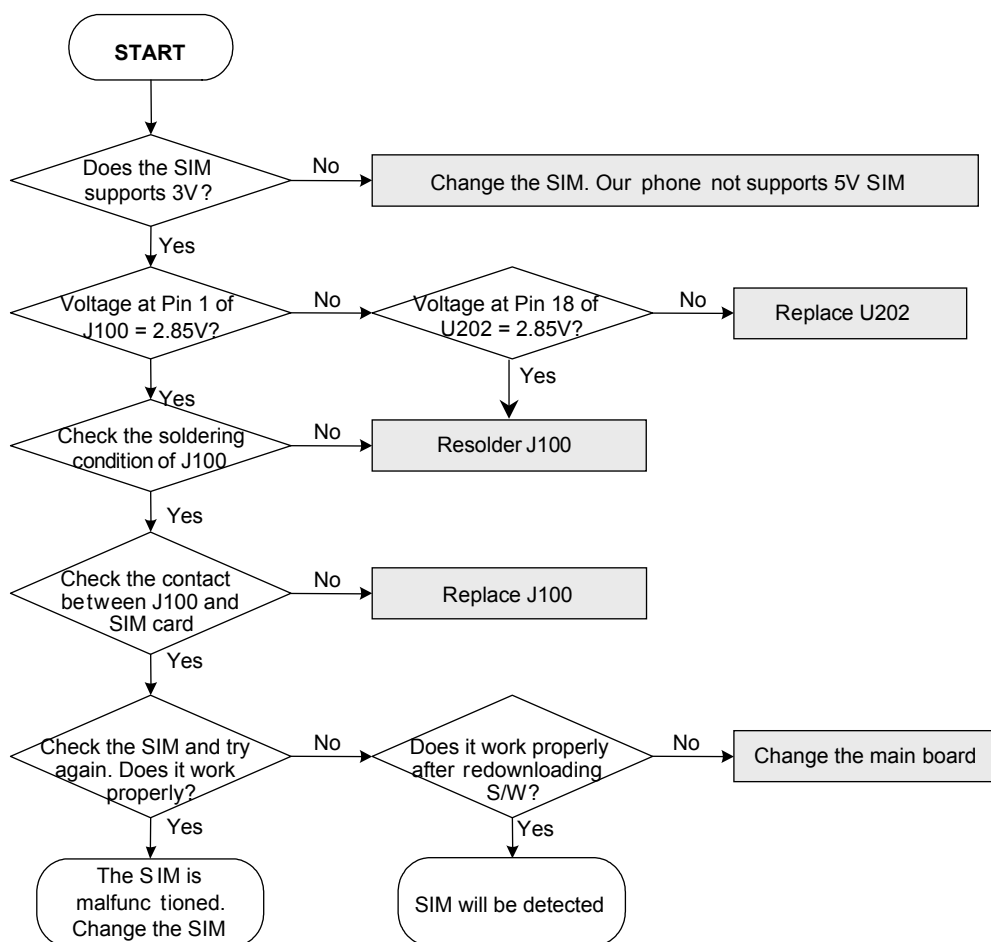


Figure 4-27

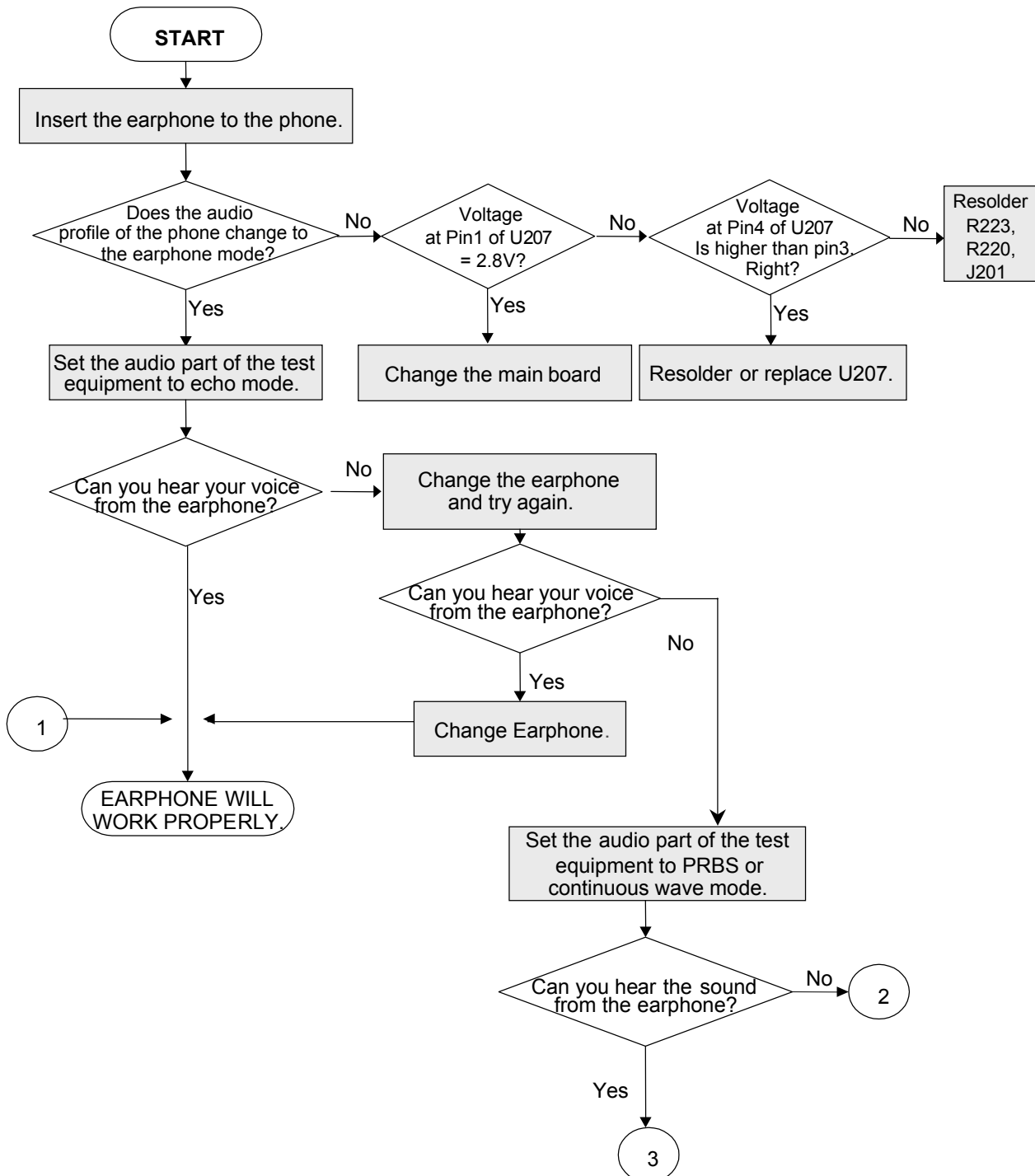
PIN 1

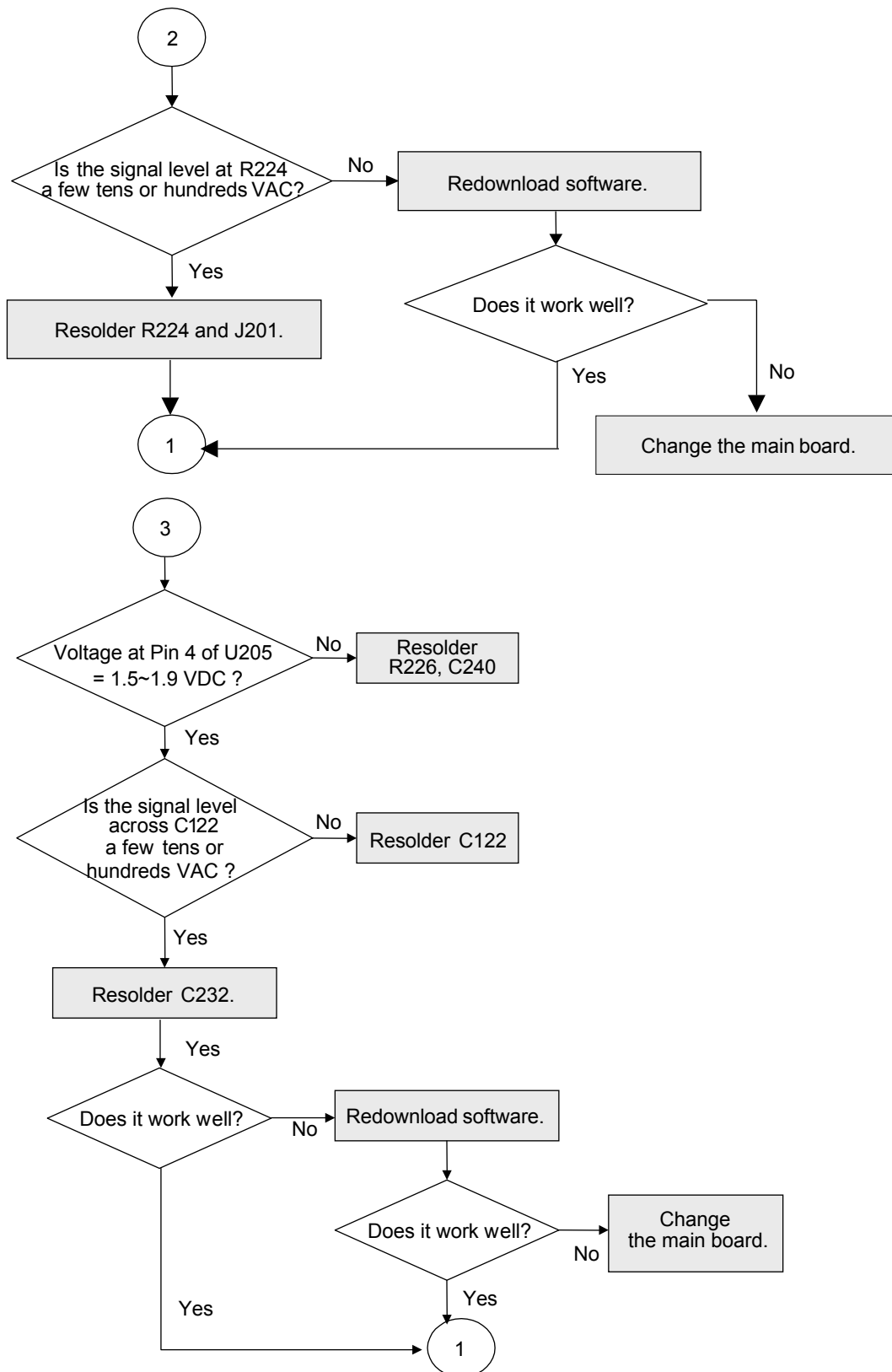


## 4. TROUBLE SHOOTING

### 4.13 Ear Jack Trouble

SETTING :After Initialize SS, Test in EGSM, DCS Mode



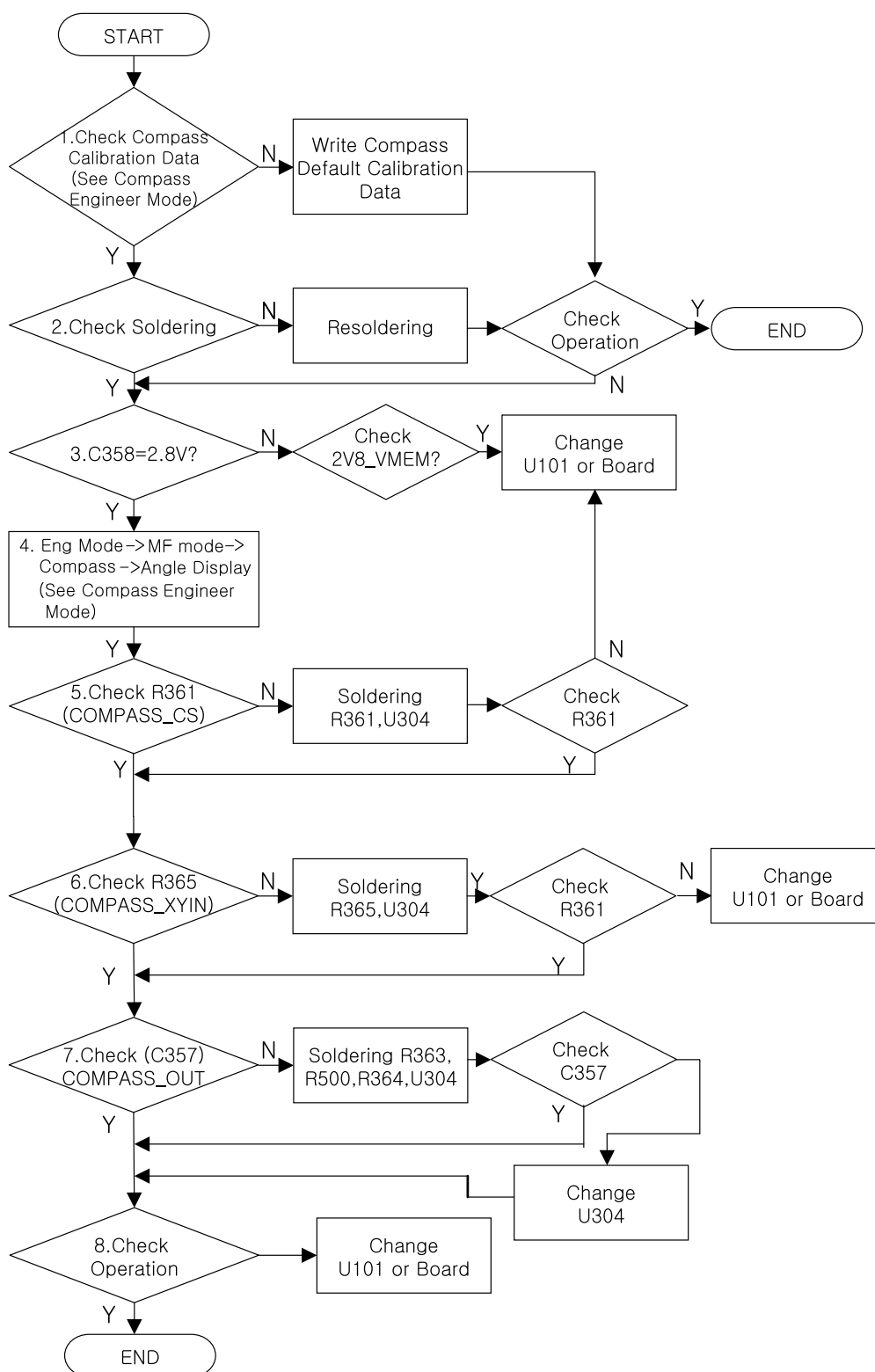


\_\_\_\_\_



## 4.14 Compass Trouble

Remove magnetic and electronic equipment for example Speaker, Monitor etc Before You test.



## 4. TROUBLE SHOOTING

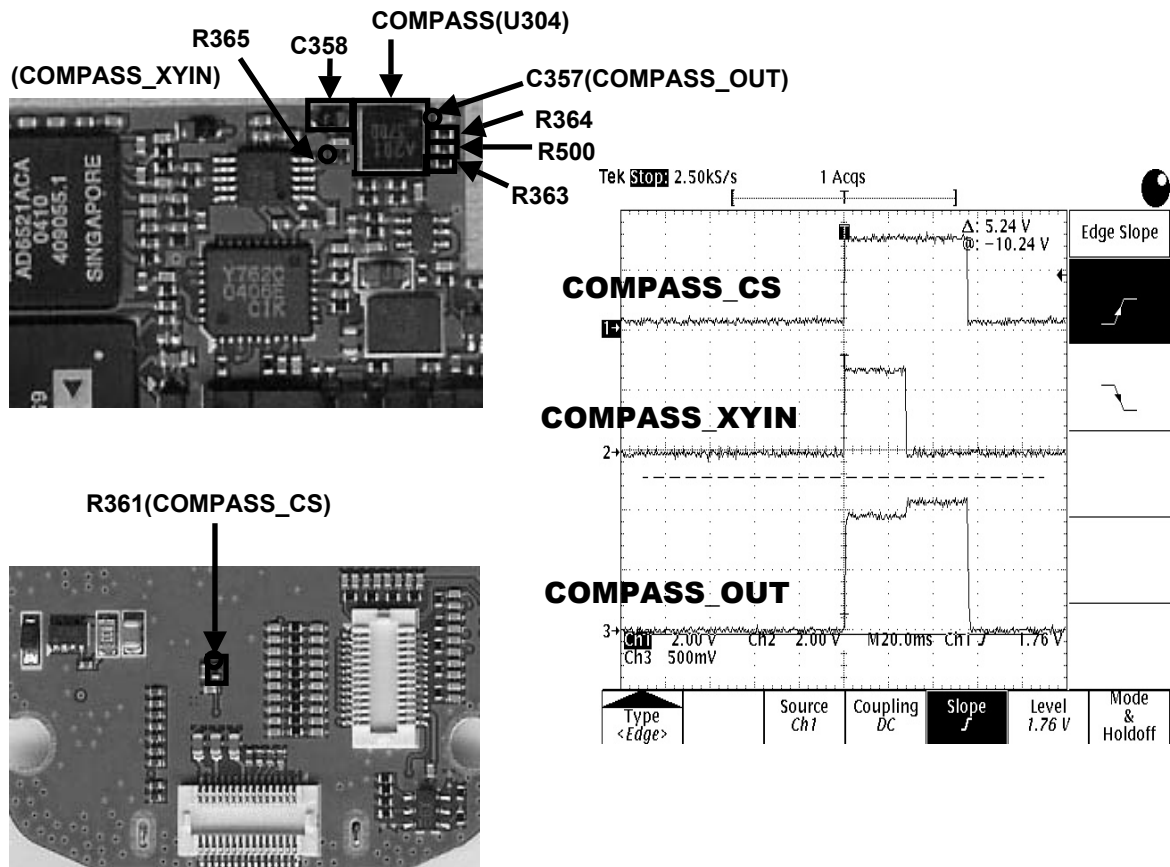
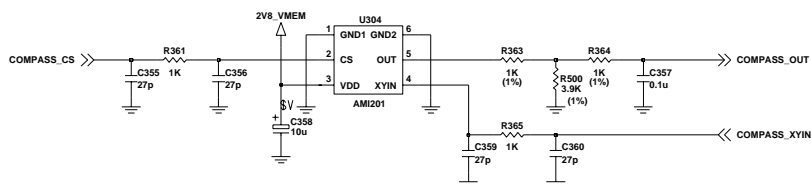
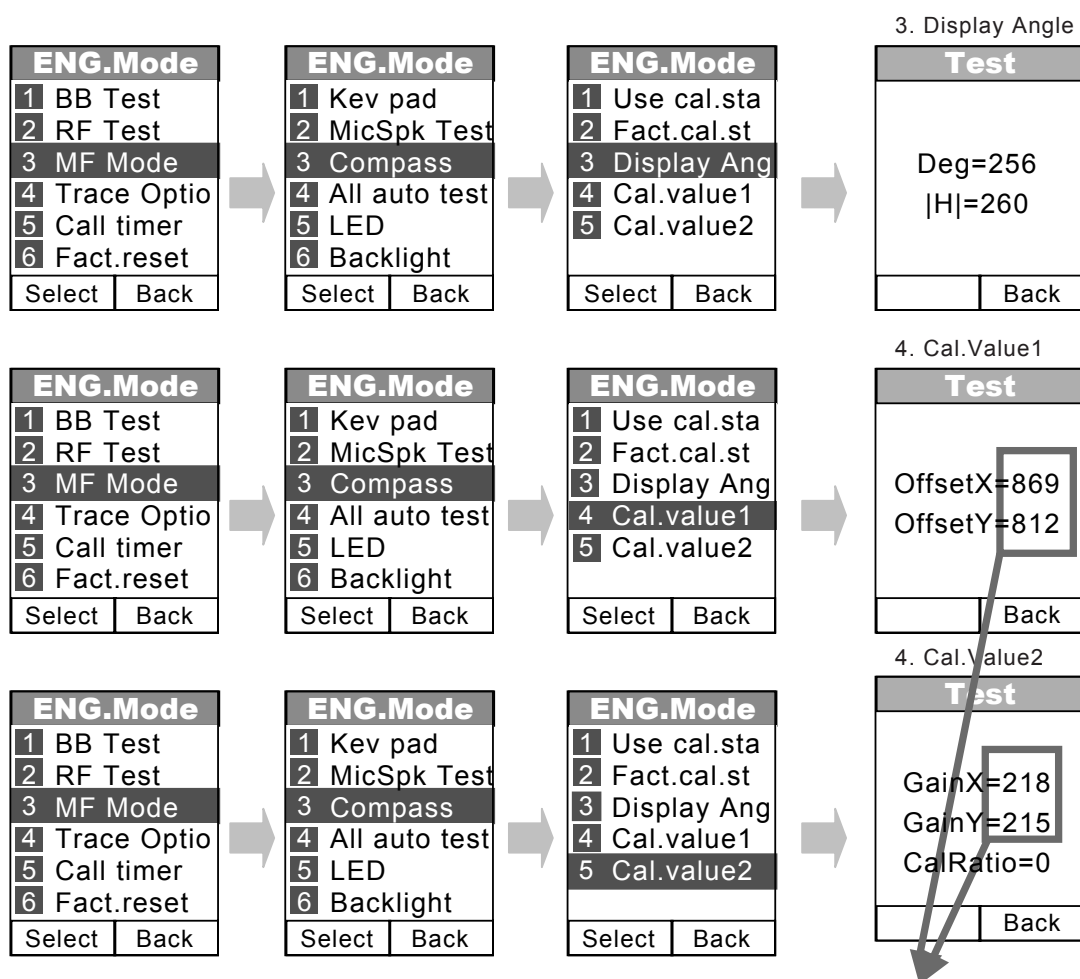


Figure 4-29



Circuit Diagram 4-21

## Compass Engineer Mode



**Offset or Gain MUST NOT BE "ZERO".**

Write Compass Default Cal Data, when These are "Zero"

### Compass Engineer Mode Description

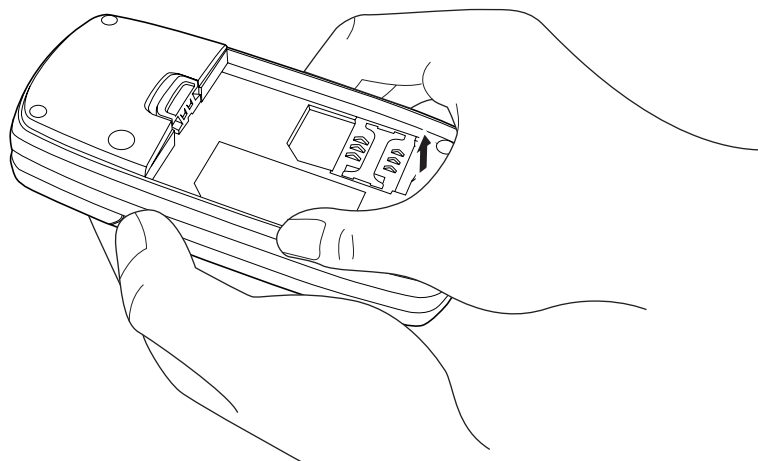
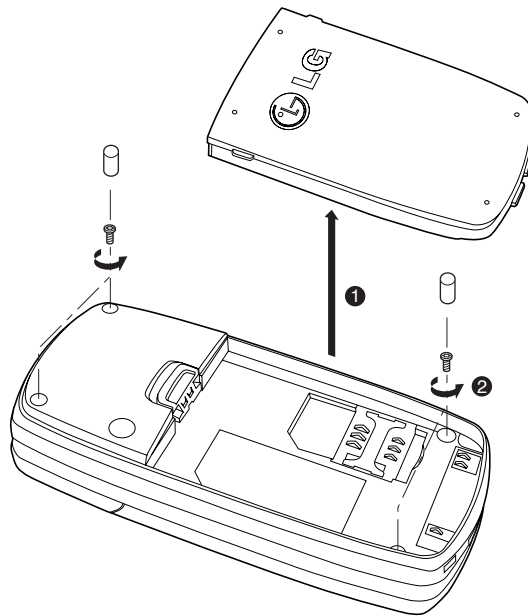
No	Menu	Description	Blank
1	User.Cal.start	User Calibration.	
2	Fact.cal.start	Factory Calibration	
3	Display Angle	Magnetic Sensor Active	
4	Cal.value1	Calibration Value(X,Y Offset)	
5	Cal.value2	Calibration Value(X,Y Gain/Calibration Ratio)	

## 5. DISASSEMBLY INSTRUCTION

---

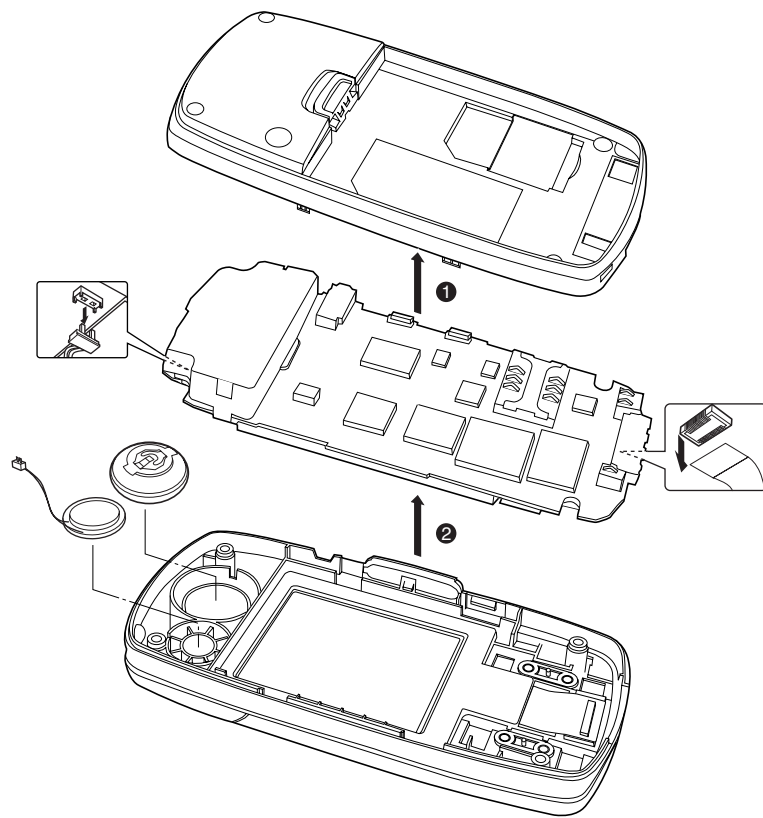
# 5. DISASSEMBLY INSTRUCTION

## 5.1 Disassembly



## 5. DISASSEMBLY INSTRUCTION

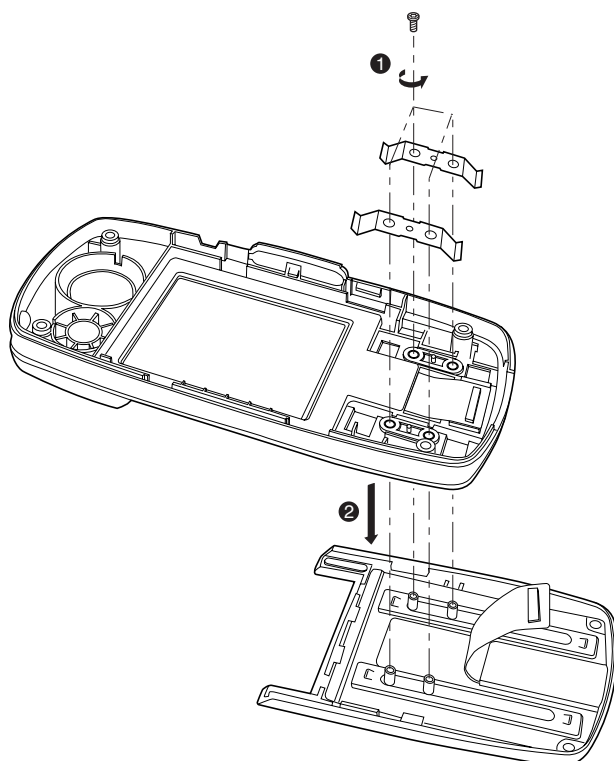
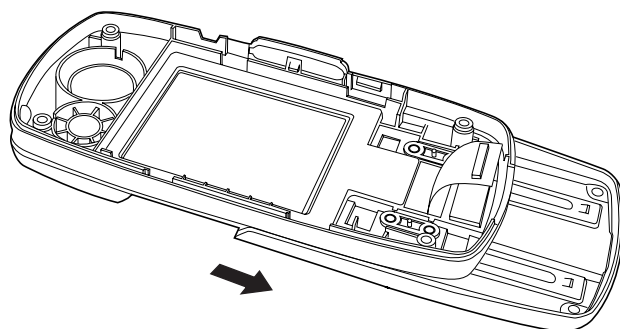
---





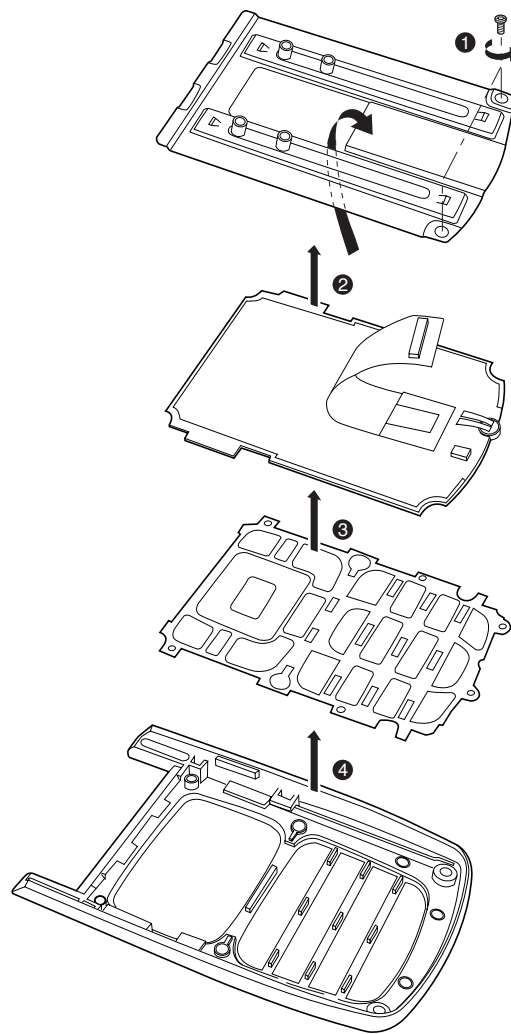
## 5. DISASSEMBLY INSTRUCTION

---



## 5. DISASSEMBLY INSTRUCTION

---

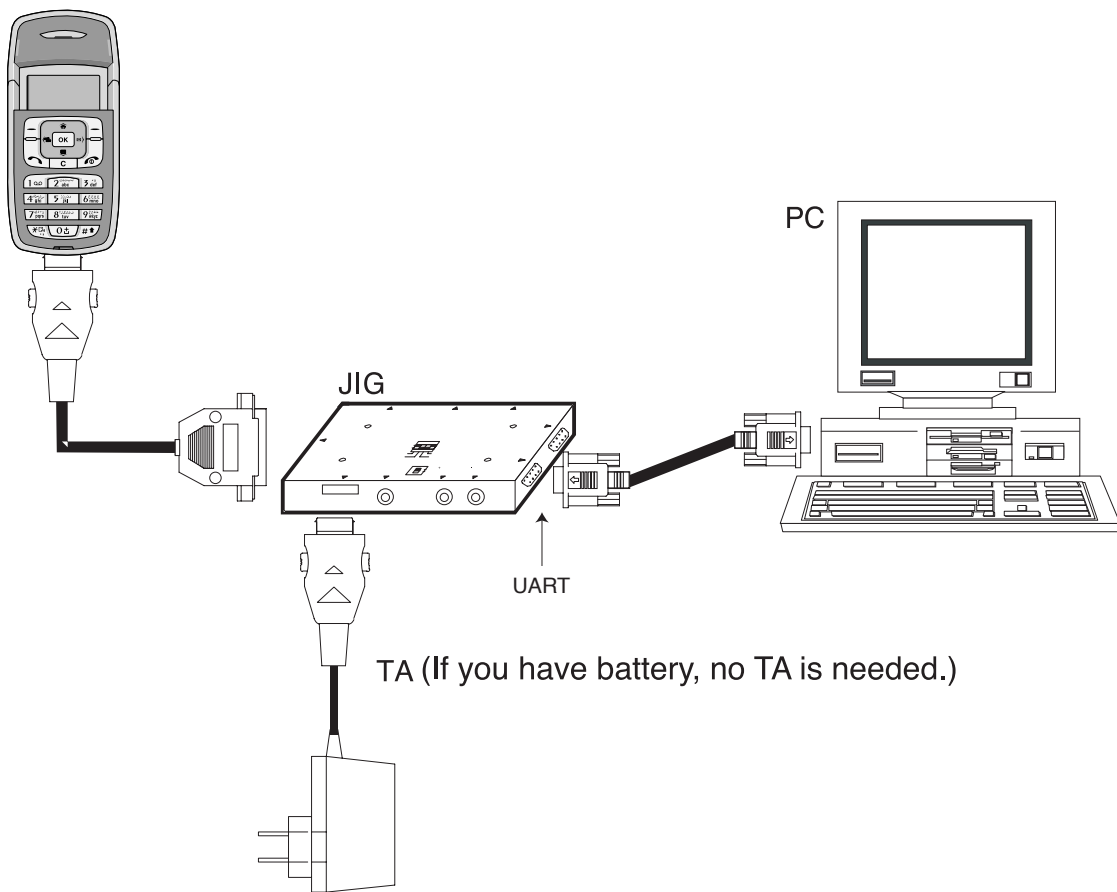


# 6. DOWNLOAD AND CALIBRATION

## 6.1 Download

### A. Download Setup

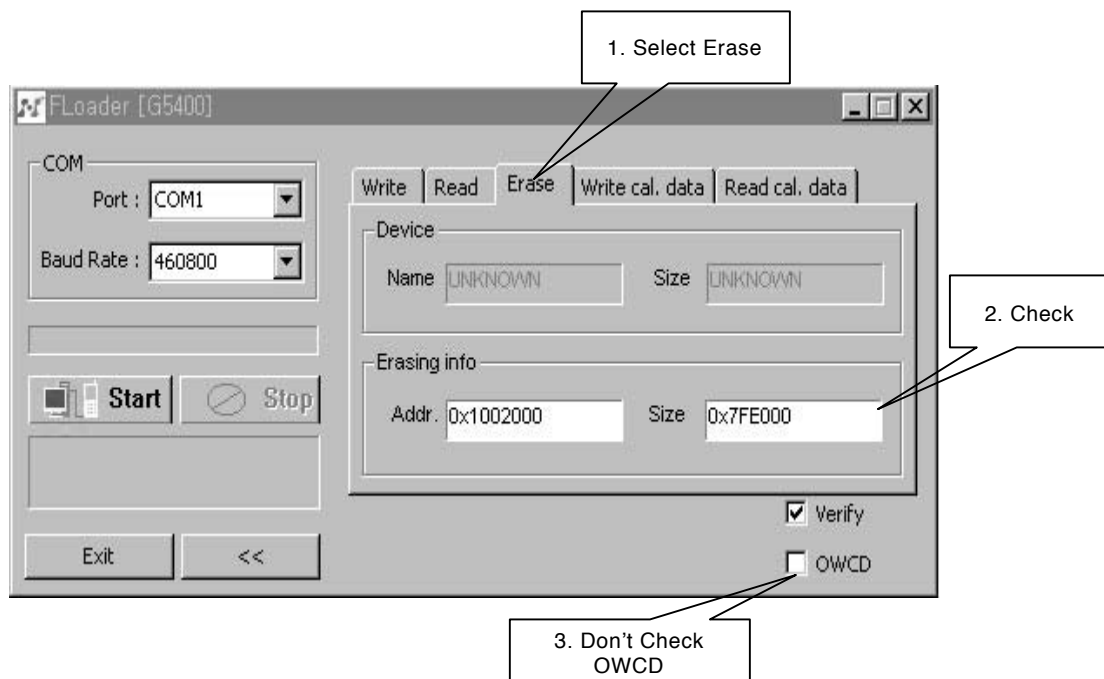
Figure 6-1 describes Download setup.



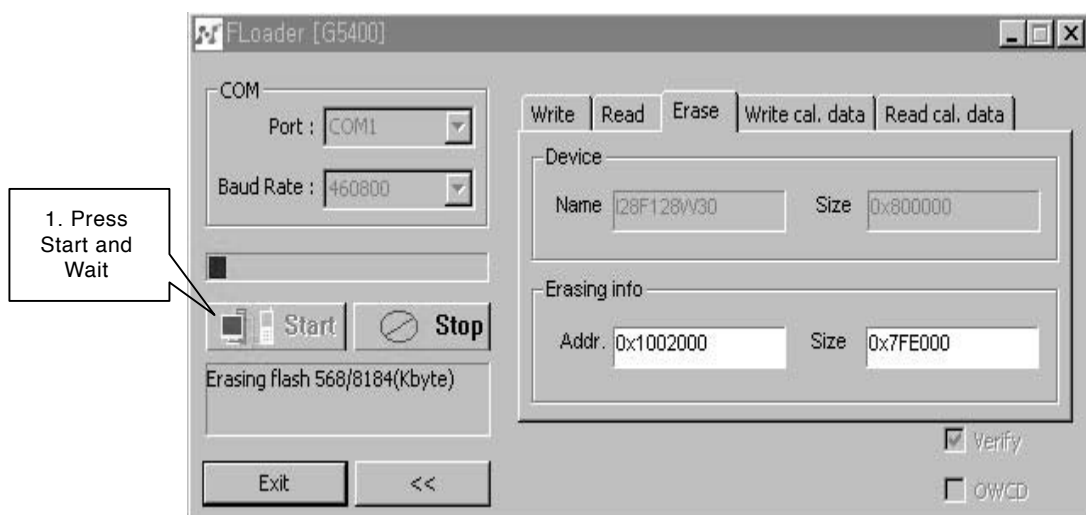
**Figure 6-1. Download Setup**

### B. Download Procedure

1. Access Flash loader program in PC and select Erase.(Don't check OWCD)



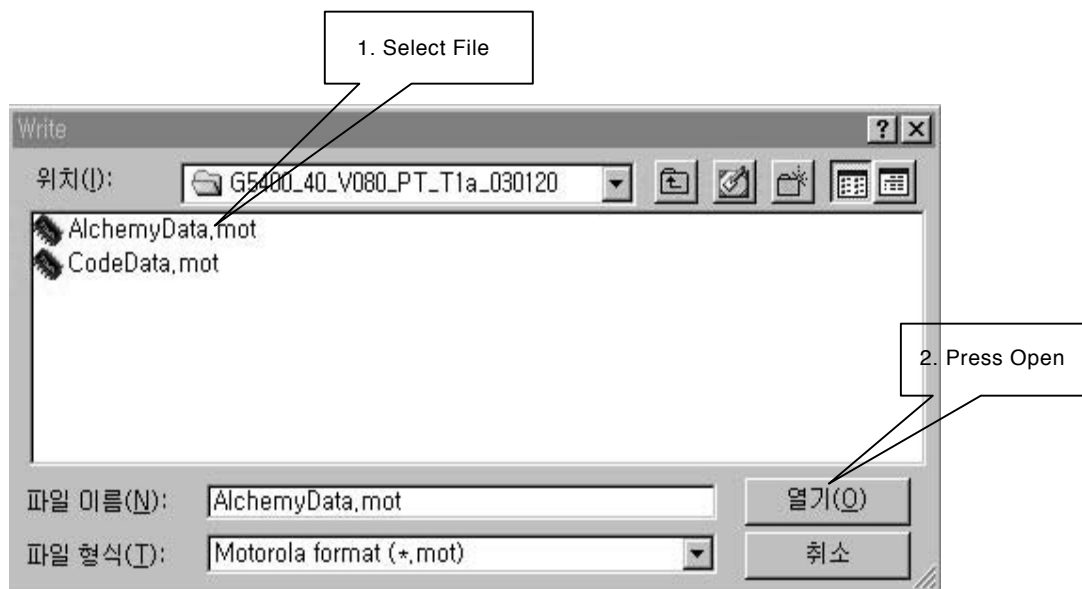
2. Press Start and Wait until Erase is completed.(Code ?? erase)




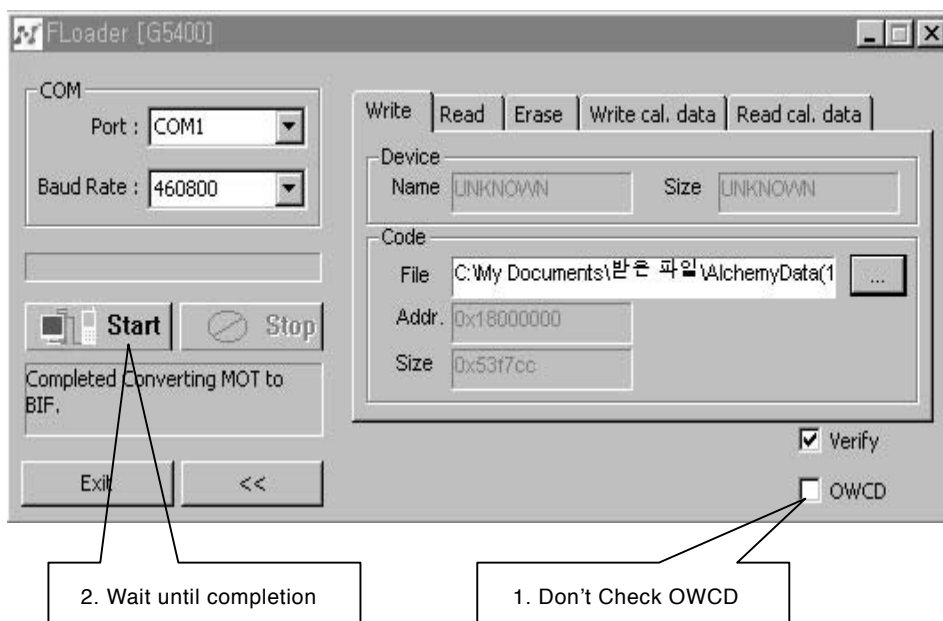
## 6. DOWNLOAD AND CALIBRATION

---

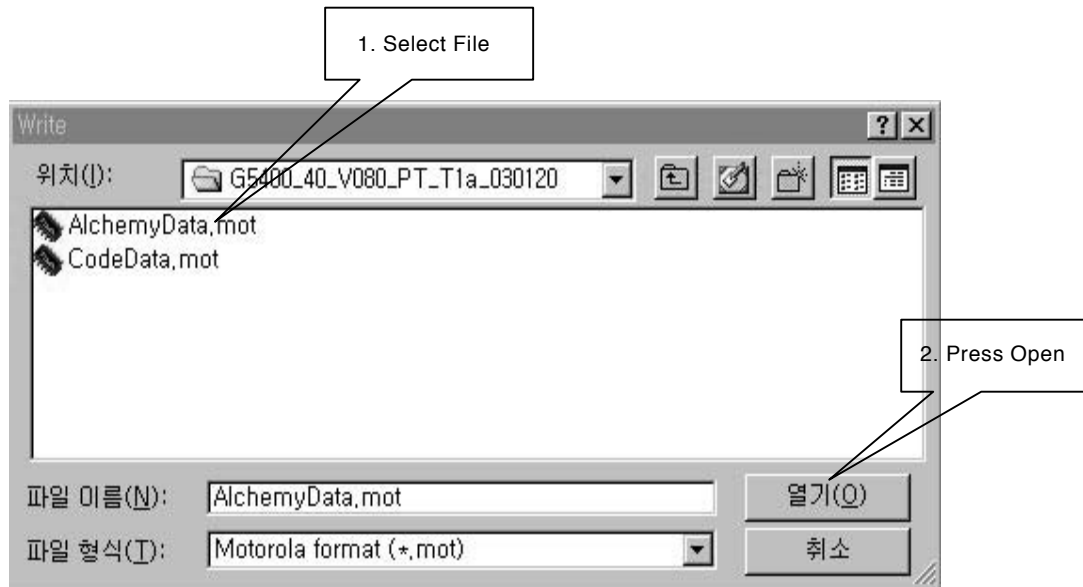
3. Change Address and Size(Address : 18000000, Size : 0x800000), and Press Start and Wait until Erase is completed again (Alchemy 8W8Cerase)



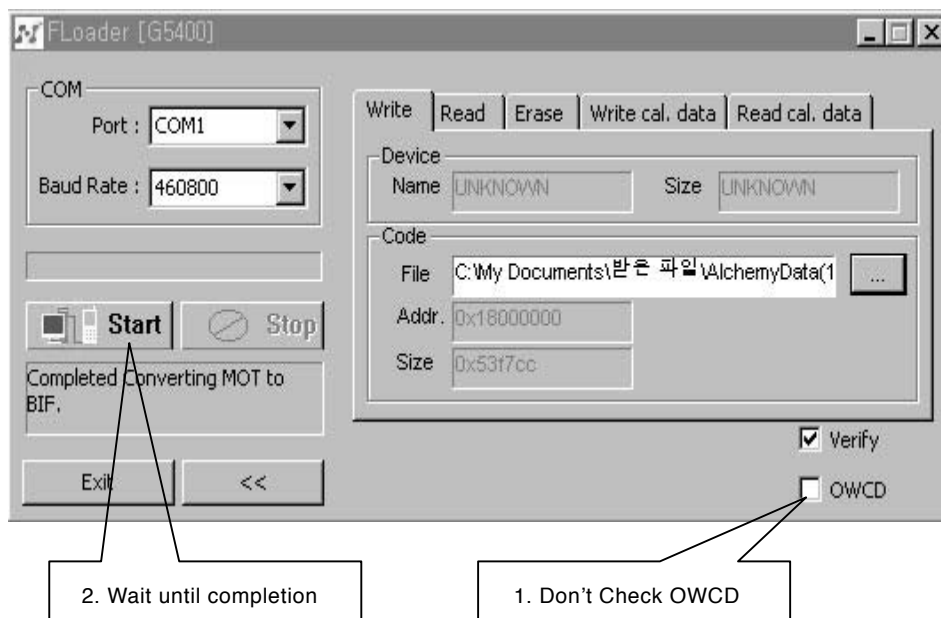
4. Press Write to start Download and press  Key to choose software (AlchemyData.mot)



### 5. Choose software

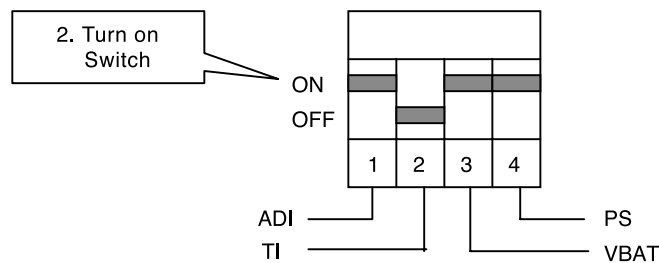
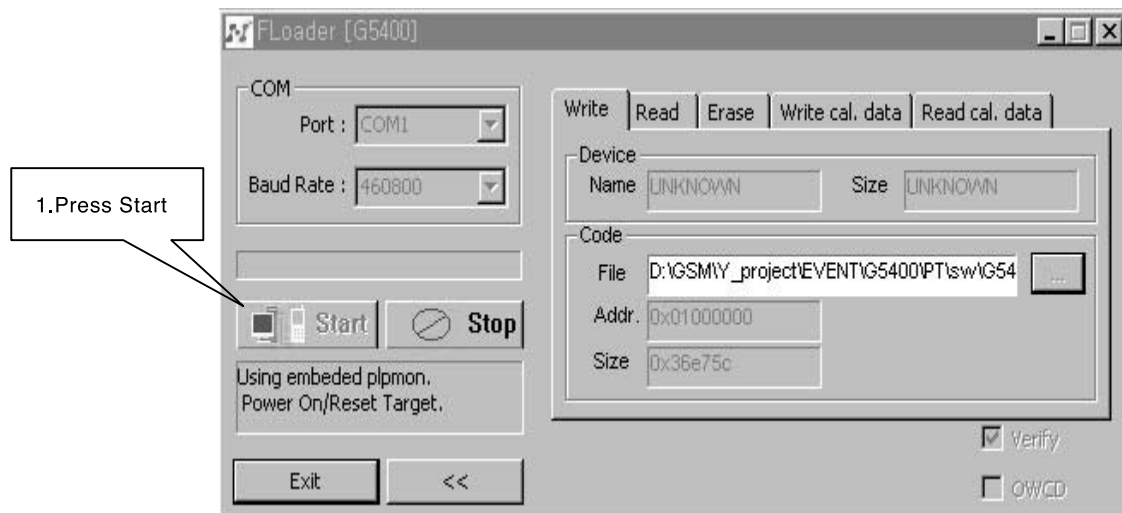


### 6. Wait until converting from MOT to BIF is completed(Don't check OWCD)

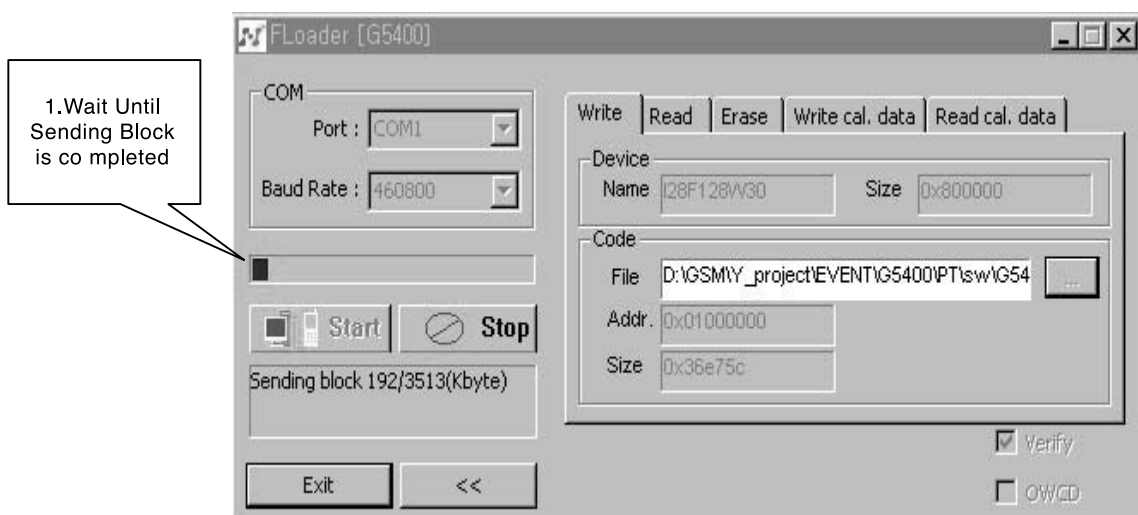


## 6. DOWNLOAD AND CALIBRATION

7. Press Start and Power on the phone using JIG remote Power on(Switch 1)

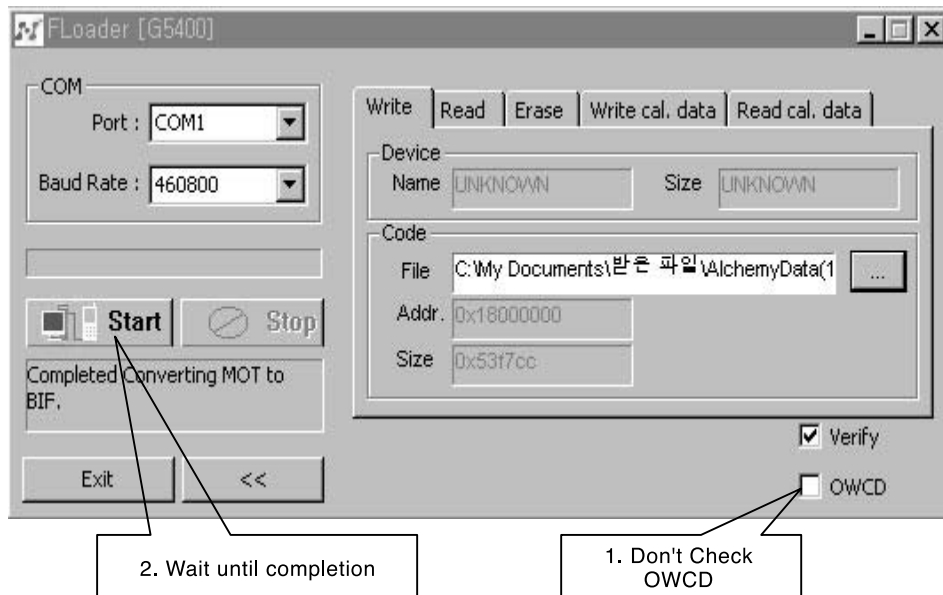


8. Wait until Sending Block is completed

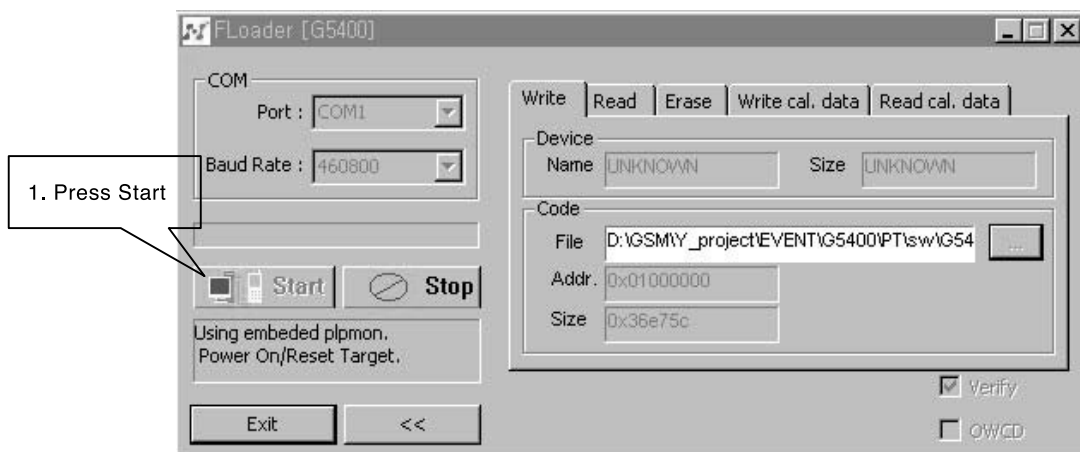


## 6. DOWNLOAD AND CALIBRATION

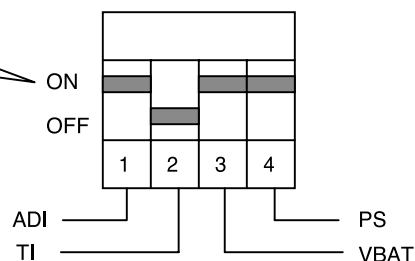
9. Press Write to start Download and press  Key to choose software(CodeData.mot)



10. Choose software



2. Turn on Switch

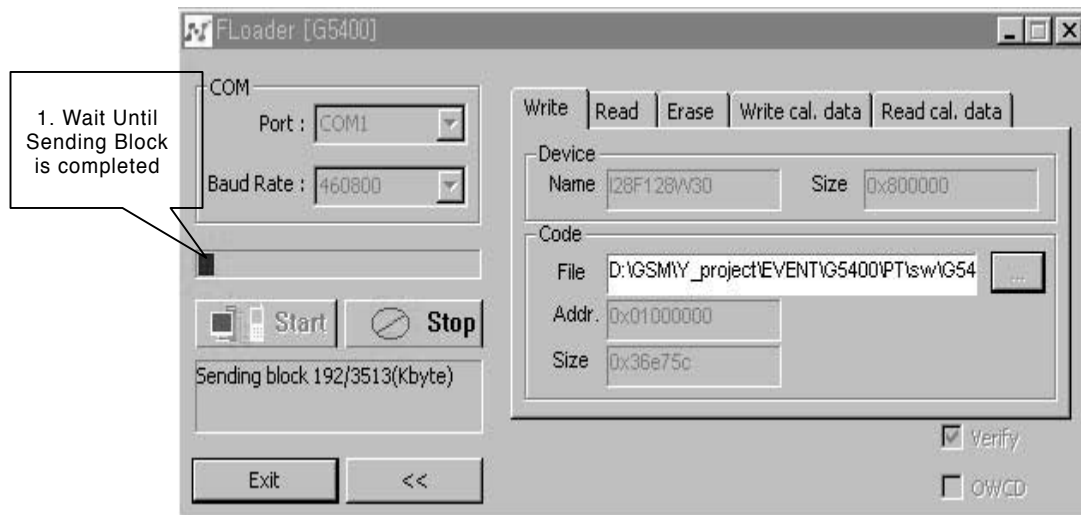




## 6. DOWNLOAD AND CALIBRATION

---

11. Wait until Sending Block is completed



## 6.2 Calibration

### A. Equipment List

Table 6-1. Calibration Equipment List

Equipment for Calibration	Type / Model	Brand
Wireless Communication Test Set	HP-8960	Agilent
RS-232 Cable and Test JIG		LG
RF Cable		LG
Power Supply	HP-66311B	Agilent
GPIO interface card	HP-GPIO	Agilent
Calibration & Final test software		LG
Test SIM Card		
PC (for Software Installation)	Pentium II class above 300MHz	

### B. Equipment Setup

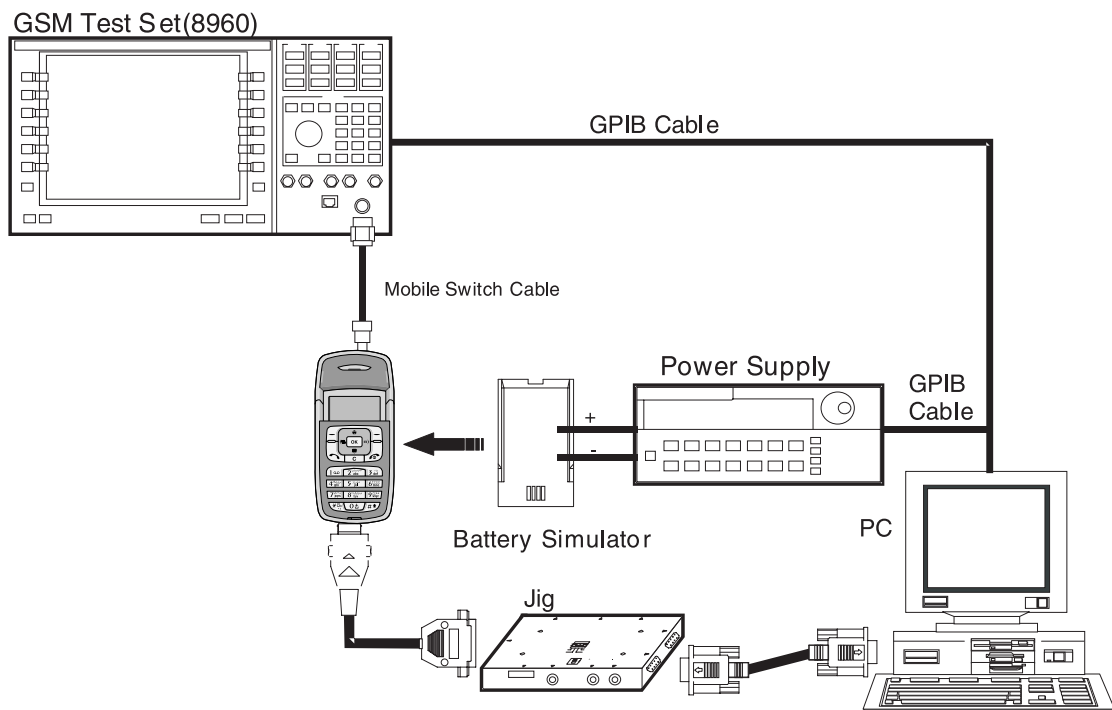


Figure 6-2.

## 6. DOWNLOAD AND CALIBRATION

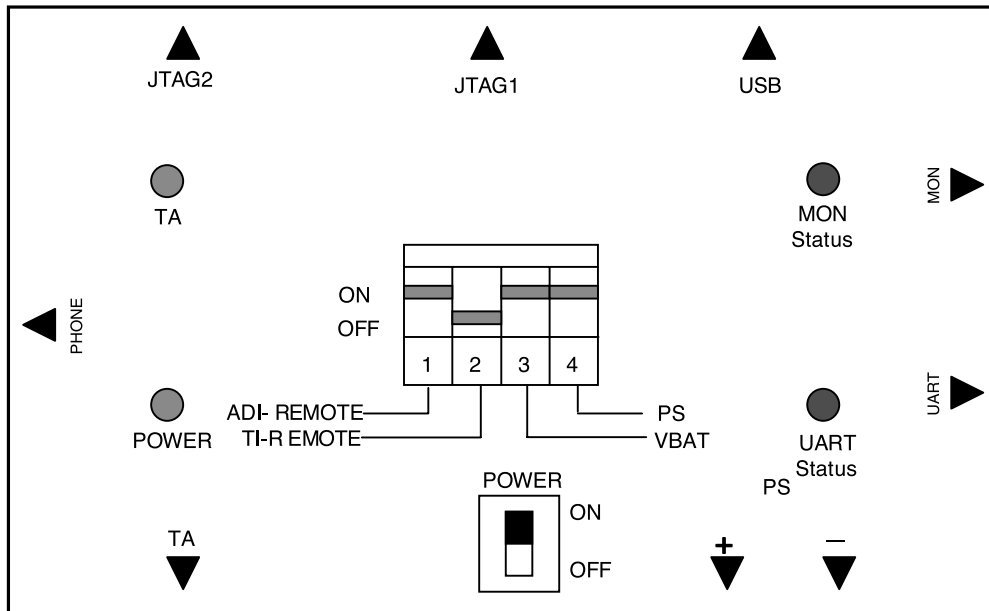


Figure 6-3. The top view of Test JIG

### C. Test Jig Operation

Table 6-2. Calibration Equipment List

Power Source	Description
Power Supply	usually 4.0V
Travel Adaptor	Use TA, name is TA-20G(24pin)

Table 6-3. Calibration Equipment List

Switch Number	Name	Description
Switch 1	ADI-REMOTE	In ON state, phone is awaked. It is used ADI chipset.
Switch 2	TI-REMOTE	In ON state, phone is awaked. It is used TI chipset.
Switch 3	VBAT	Power is provided for phone from battery
Switch 4	PS	Power is provided for phone from Power supply

Table 6-4. Calibration Equipment List

LED Number	Name	Description
LED 1	Power	Power is provided for Test Jig.
LED 2	TA	Indicate charging state of the phone battery
LED 3	UART	Indicate data transfer state through the UART port
LED 4	MON	Indicate data transfer state through the MON port

## 6. DOWNLOAD AND CALIBRATION

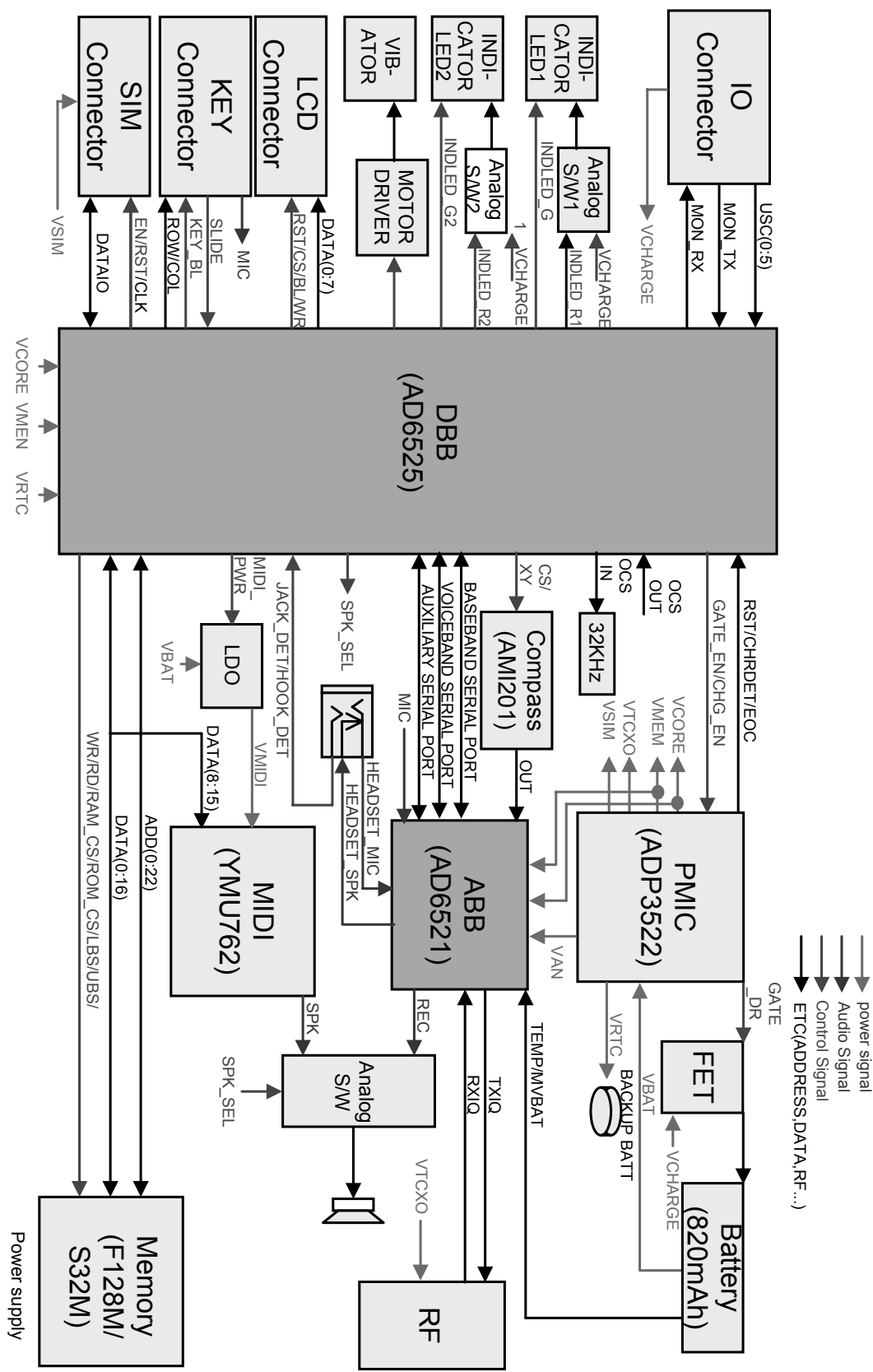
---

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3 rd , 4 th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1 st ON state

### **D. Procedure**

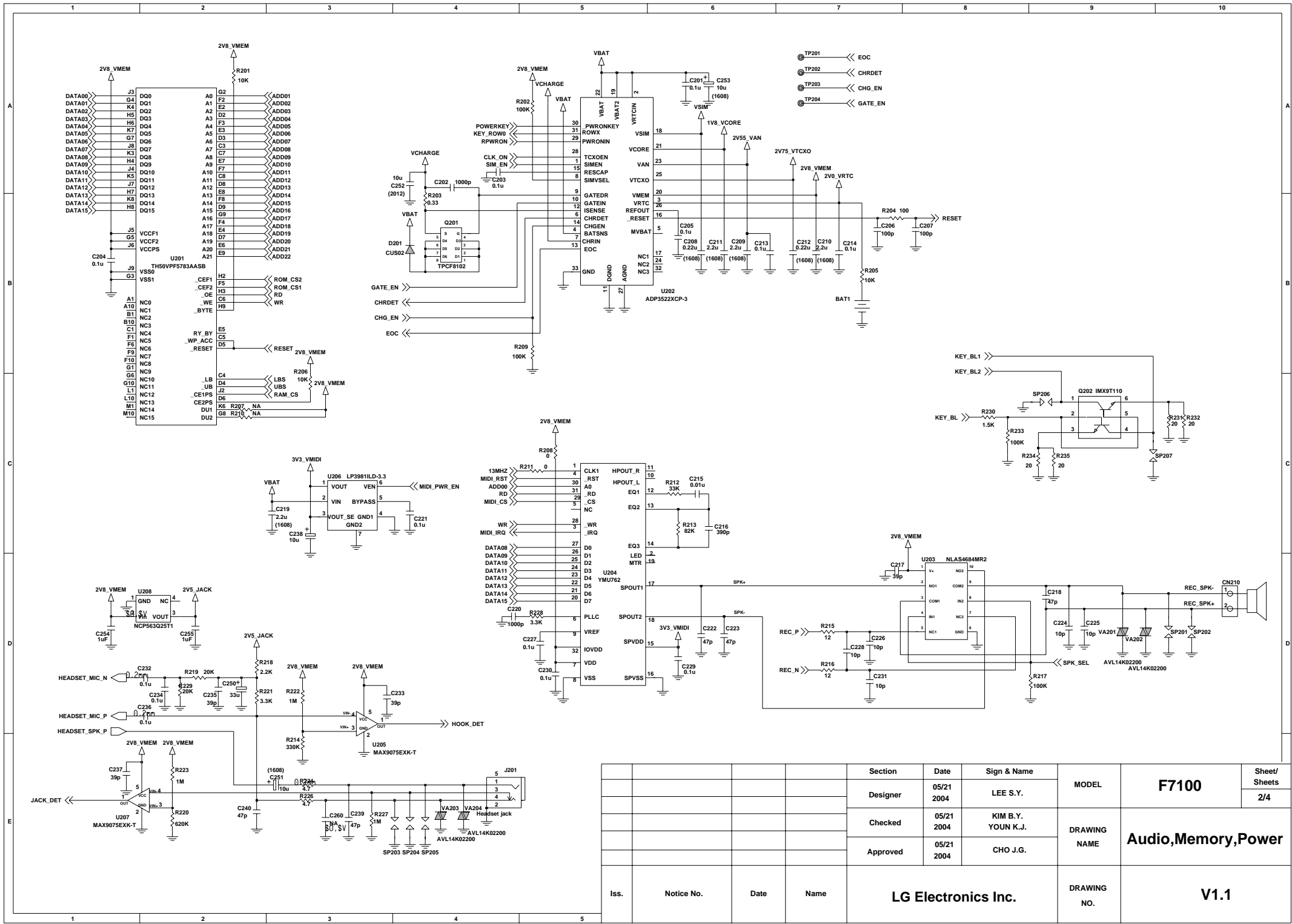
1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Power ON PC then enter into Windows 98(Remark : Windows 2000 system could be feasible)
3. Run AUTOCAL.exe, the AUTOCAL application window will be appeared.

# 7. BLOCK DIAGRAM





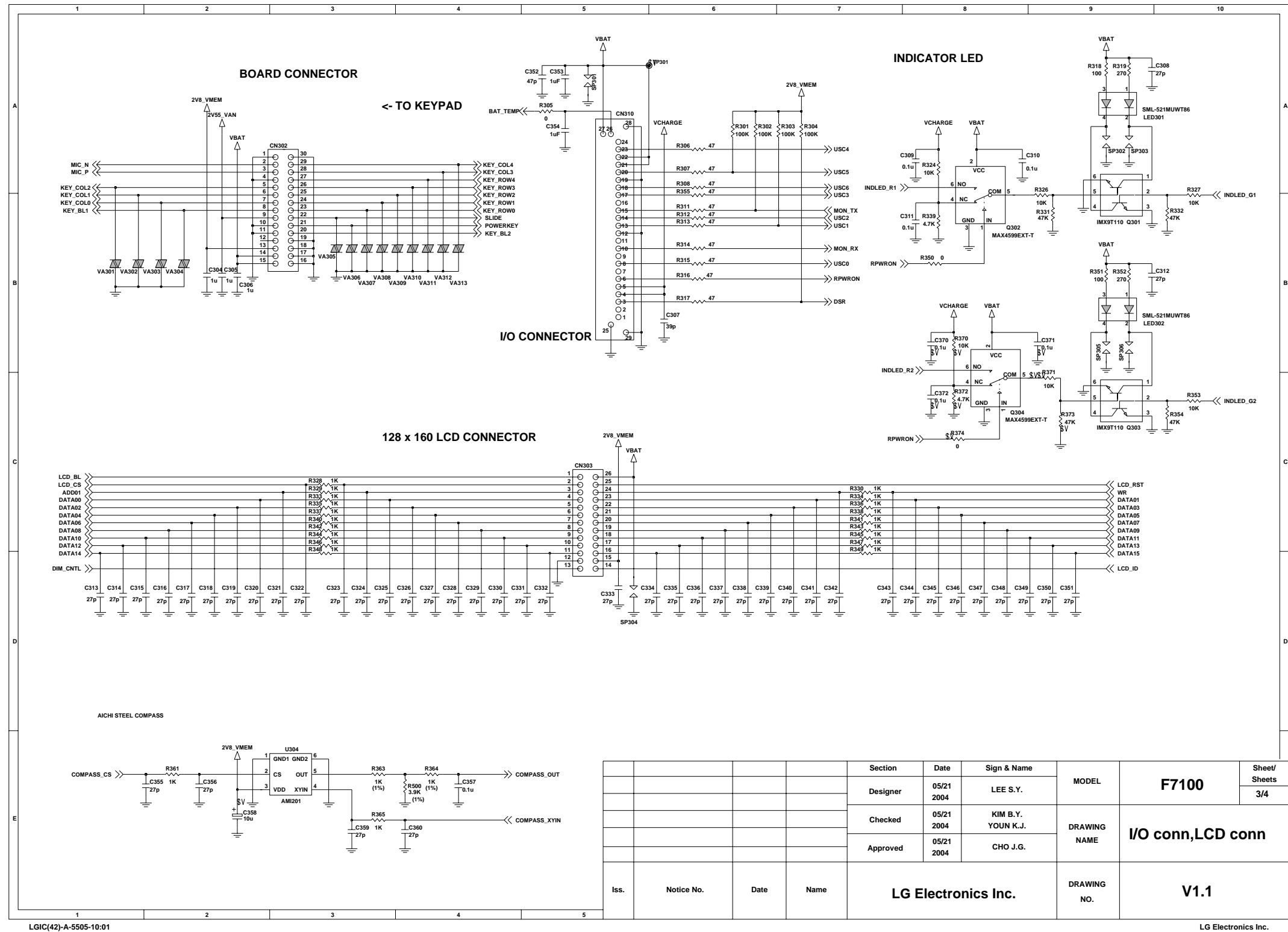
# 8. CIRCUIT DIAGRAM



LGIC(42)-A-5505-10:01

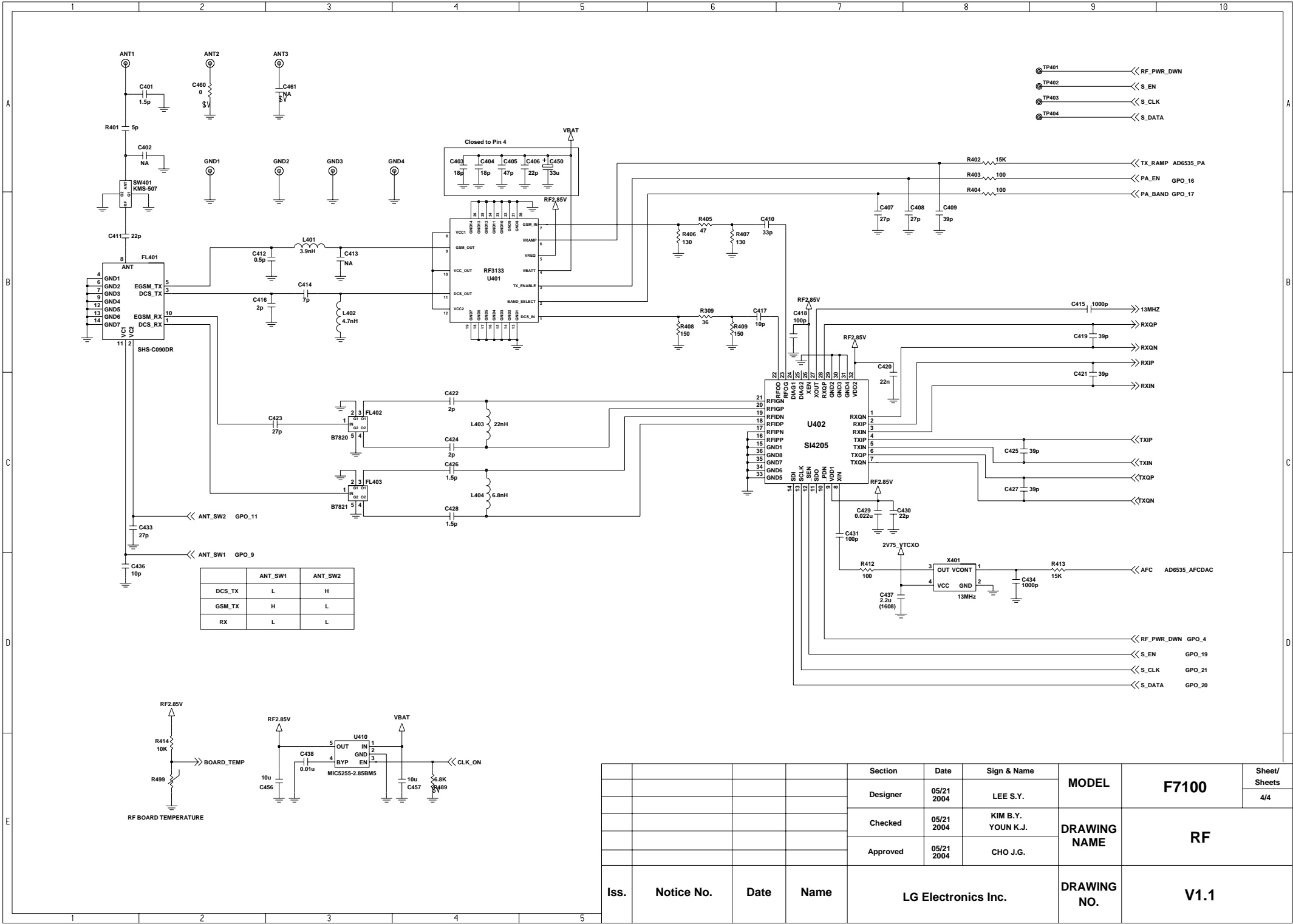
LG Electronics Inc.

## 8. CIRCUIT DIAGRAM

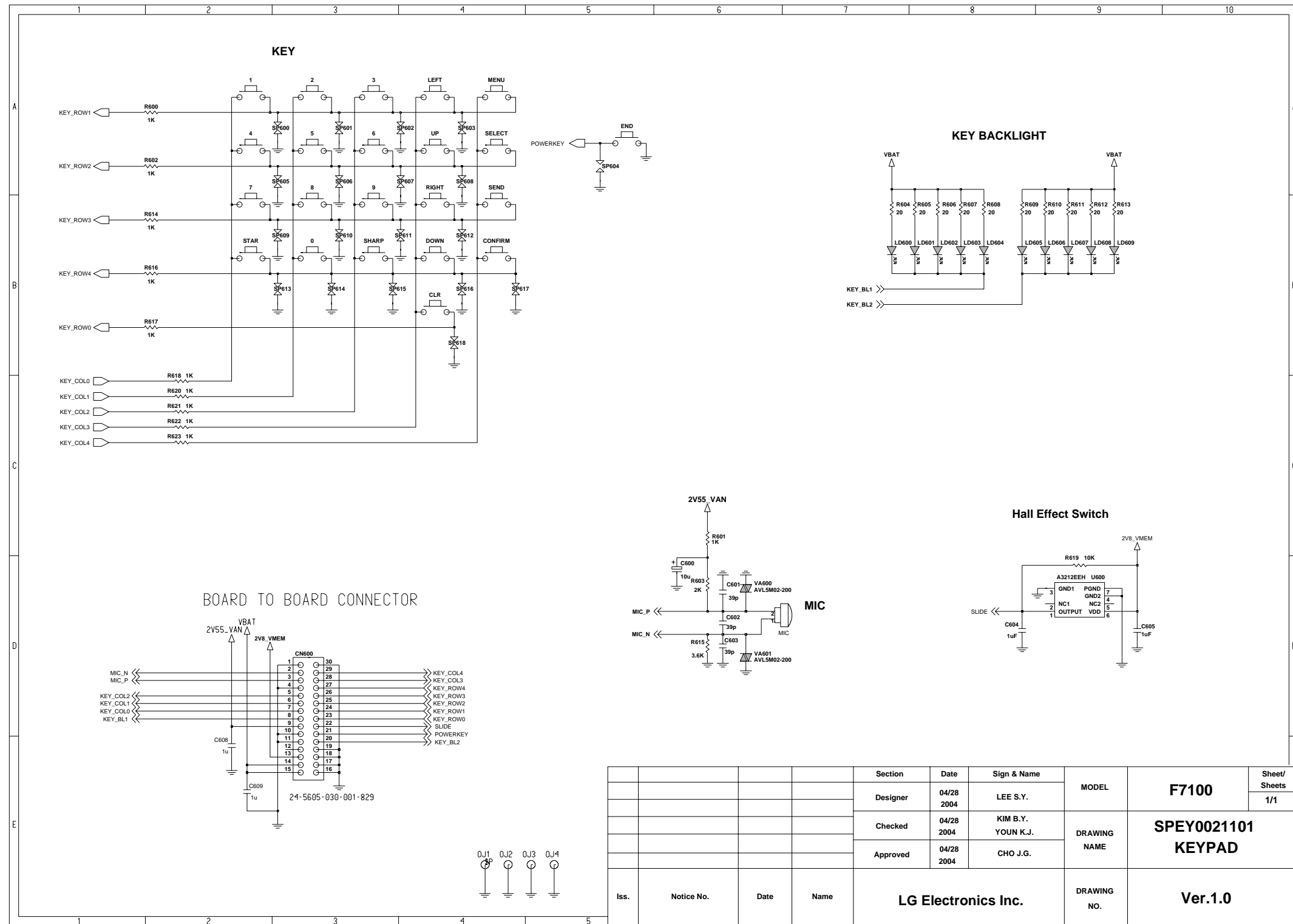




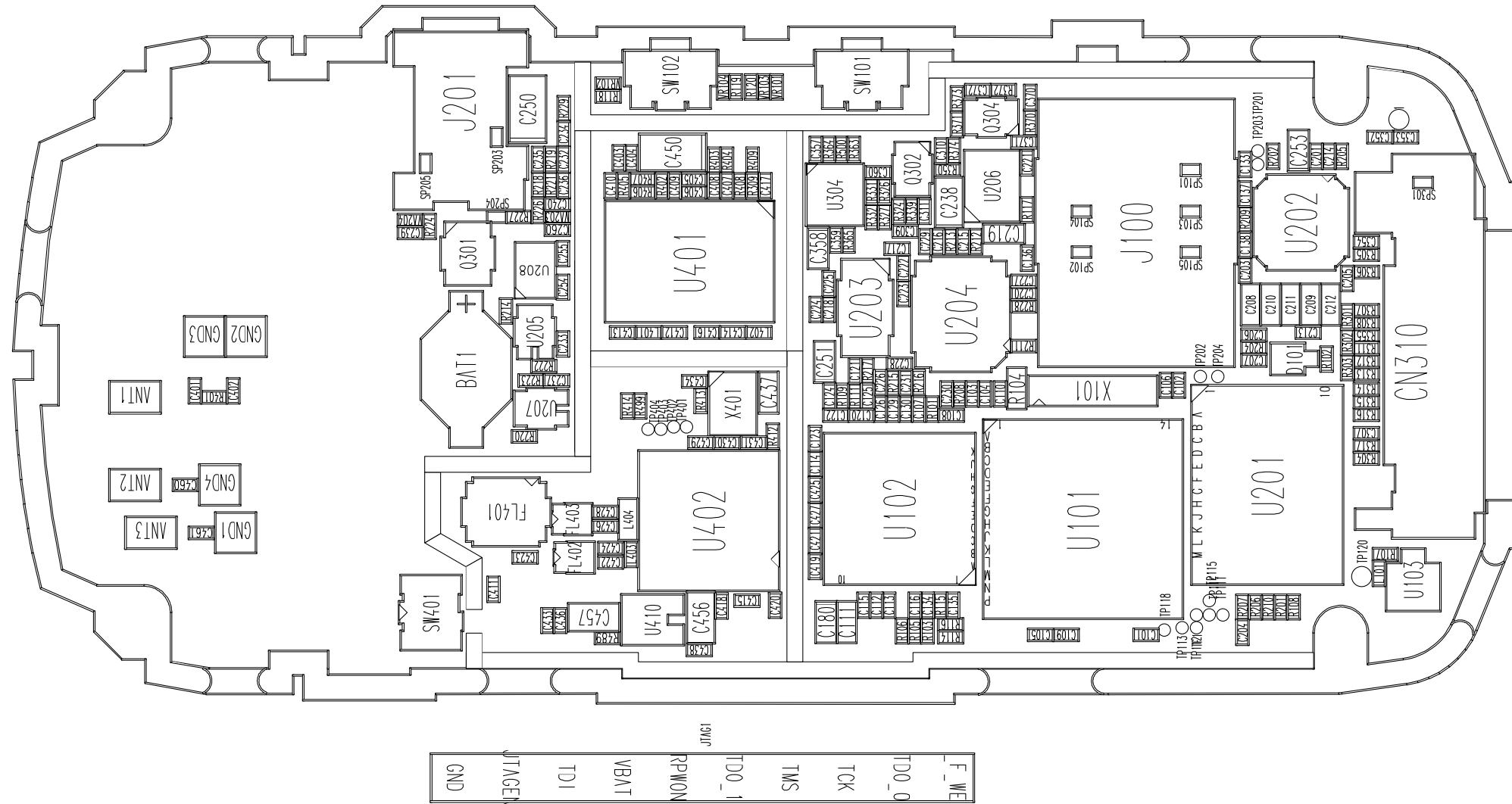
8. CIRCUIT DIAGRAM



## 8. CIRCUIT DIAGRAM

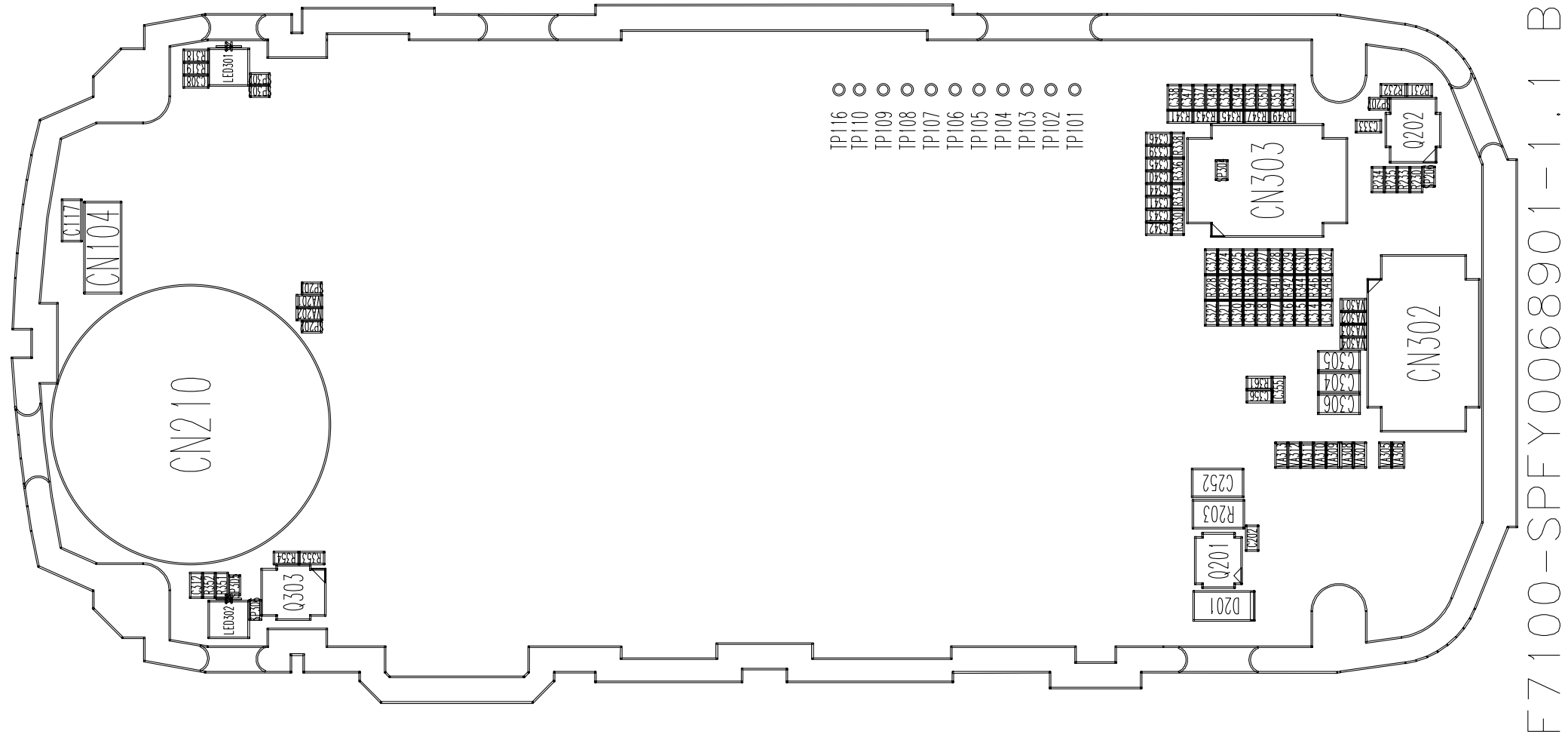


## 9. PCB LAYOUT



F7100-SPFY0068901-1.1\_TOP

## 9. PCB LAYOUT



**Note.**

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## 10. ENGINEERING MODE

### A. About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

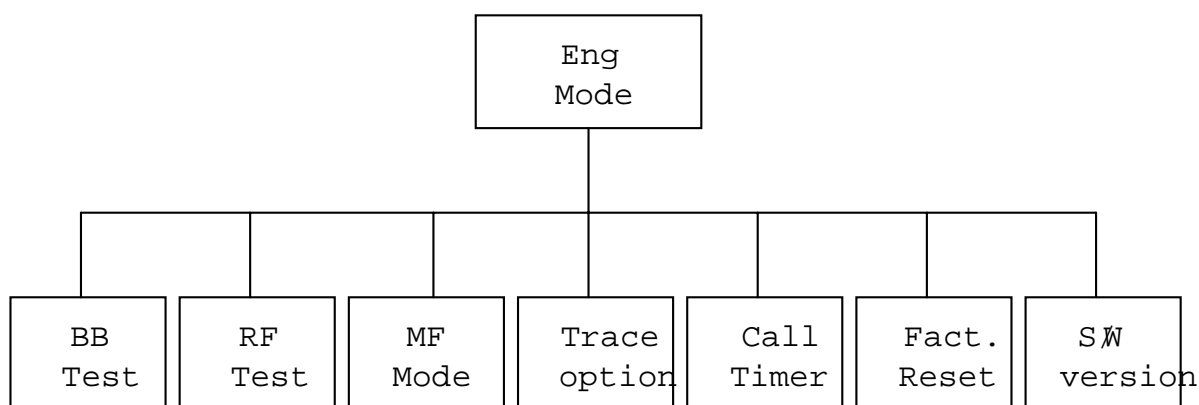
### B. Access Codes

The key sequence for switching the engineering mode on is 2945##. Pressing END will switch back to non-engineering mode operation.

### C. Key Operation

Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back' key will switch back to the original test menu.

### D. Engineering Mode Menu Tree



## 10. ENGINEERING MODE

---

### 10.1 BB Test [MENU 1]

Baseband Test

#### 10.1.1 LED

This Menu is to test the indicator LED on the folder of a handset.

- 1) **Left RED on:** Red light turns on in Left indicator LED
- 2) **Right RED on:** Red light turns on in Right indicator LED
- 3) **Left GREEN on:** Green light turns on in Left indicator LED
- 4) **Right GREEN on:** Green light turns on in Right indicator LED
- 5) **Left ORANGE on:** Orange light turns on in Left indicator LED
- 6) **Right ORANGE on:** Orange light turns on in Right indicator LED
- 7) **LED all off:** All of indicator LED turns off.

#### 10.1.2 LCD

- 1) **Contrast value:** This menu is to test Main LCD contrast.
- **Contrast Value [10-50]:** Change this value by up and down key.

#### 10.1.3 Backlight

This menu is to test the LCD Backlight and Keypad Backlight.

- 1) **Backlight on:** LCD Backlight and Keypad Backlight light on at the same time.
- 2) **Backlight off:** LCD Backlight and Keypad Backlight light off at the same time.
- 3) **Backlight value:** This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left/Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

#### 10.1.4 Buzzer

This menu is to test the melody sound.

- 1) **Melody on:** Melody sound is played through the speaker.
- 2) **Melody off:** Melody sound is off.

#### 10.1.5 Vibrator

This menu is to test the vibration mode.

- 1) **Vibrator on:** Vibration mode is on.
- 2) **Vibrator off:** Vibration mode is off.

### 10.1.6 ADC (Analog to Digital Converter)

This displays the value of each ADC.

- 1) **MVBAT ADC**: Main Voltage Battery ADC
- 2) **AUX ADC**: Auxiliary ADC
- 3) **TEMPER ADC**: Temperature ADC

### 10.1.7 BATTERY

- 1) **Bat Cal**: This displays the value of Battery Calibration. The following menus are displayed in order: BAT\_LEV\_4V, BAT\_LEV\_3\_LIMIT, BAT\_LEV\_2\_LIMIT, BAT\_LEV\_1\_LIMIT, BAT\_IDLE\_LIMIT, BAT\_INCALL\_LIMIT, SHUT\_DOWN\_VOLTAGE, BAT\_RECHARGE\_LMT
- 2) **TEMP Cal**: This displays the value of Temperature Calibration. The following menus are displayed in order: TEMP\_HIGH\_LIMIT, TEMP\_HIGH\_RECHARGE\_LMT, TEMP\_LOW\_RECHARGE\_LMT, TEMP\_LOW\_LIMIT

### 10.1.8 Audio

This is a menu for setting the control register of Voiceband Baseband Codec chip.

Although the actual value can be written over, it returns to default value after switching off and on the phone.

- 1) **VbControl1**: VbControl1 bit Register Value Setting
- 2) **VbControl2**: VbControl2 bit Register Value Setting
- 3) **VbControl3**: VbControl3 bit Register Value Setting
- 4) **VbControl4**: VbControl4 bit Register Value Setting
- 5) **VbControl5**: VbControl5 bit Register Value Setting
- 6) **VbControl6**: VbControl6 bit Register Value Setting

### 10.1.9 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) **DAI AUDIO**: DAI audio mode
- 2) **DAI UPLINK**: Speech encoder test
- 3) **DAI DOWNLINK**: Speech decoder test
- 4) **DAI OFF**: DAI mode off



## 10. ENGINEERING MODE

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### 10.2 RF Test [MENU 2]

Radio Frequency Test

#### 10.2.1 SAR test

This menu is to test the Specific Absorption Rate.

- 1) **SAR test on:** Phone continuously process TX only. Call-setup equipment is not required.
- 2) **SAR test off:** TX process off

### 10.3 MF mode [MENU 3]

This manufacturing mode is designed to do the baseband test automatically.

Selecting this menu will

process the test automatically, and phone displays the previous menu after completing the test.

#### 10.3.1 All auto test

LED, LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic&Speaker, Compass are tested in order for a certain time.

#### 10.3.2 LED

From Left RED LED to Right Orange LED are turned on one by one for about 1s, then off

#### 10.3.3 Backlight

LCD Backlight and LED Backlight are on for about 1.5 seconds at the same time, then off.

#### 10.3.4 Buzzer

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

#### 10.3.5 Vibrator

Vibrator is on for about 1.5 seconds.

### 10.3.6 LCD

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

### 10.3.7 Key pad

When a pop-up message shows 'Press Any Key', you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

### 10.3.8 MicSpkTest

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically

### 10.3.9 Compass

This Menu has all of the Compas

- 1) **User Cal Start:** Compass user Calibration Menu
- 2) **Fact.Cal Start:** Compass Factory Calibration Menu. This menu isn't used because Compass Calibration Data is used Default Calibration Data.
- 3) **Display Angle:** This menu display Degree(DEG).
- 4) **Cal Value1:** Offset Default Calibration Data(OffsetX = 818, OffsetY=861)
- 5) **Cal Value2:** Gain/Calibration Ratio Default Calibration Data (GainX=238,GainY=226,CalRatio=0)

# 11. STAND ALONE TEST

## 11.1 Introduction

This manual explains how to examine the status of RX and TX of the model.

### A. Tx Test

TX test - this is to see if the transmitter of the phones is activating normally.

### B. Rx Test

RX test - this is to see if the receiver of the phones is activating normally.

## 11.2 Setting Method

### A. COM port

- a. Move your mouse on the "Connect" button, then click the right button of the mouse and select "Com setting".
- b. In the "Dialog Menu", select the values as explained below.
  - Port: select a correct COM port
  - Baudrate: 38400
  - Leave the rest as default values

### B. Tx

#### 1. Selecting Channel

- Select one of GSM or DCS Band and input appropriate channel.

#### 2. Selecting APC

- a. Select either Power level or Scaling Factor.
- b. Power level
  - Input appropriate value GSM (between 5~19) or DCS (between 0~15)
- c. Scaling Factor
  - A 'Ramp Factor' appears on the screen.
  - You may adjust the shape of the Ramp or directly input the values.

### C. Rx

#### 1. Selecting Channel

- Select one of GSM or DCS Band and input appropriate channel.

#### 2. Gain Control Index (0~ 26) and RSSI level

- See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
- Normal phone should indicate the value of RSSI close to -16dBm.

### 11.3 Means of Test

- Select a COM port
- Set the values in Tx or Rx
- Select band and channel
- After setting them all above, press connect button.
- Press the start button

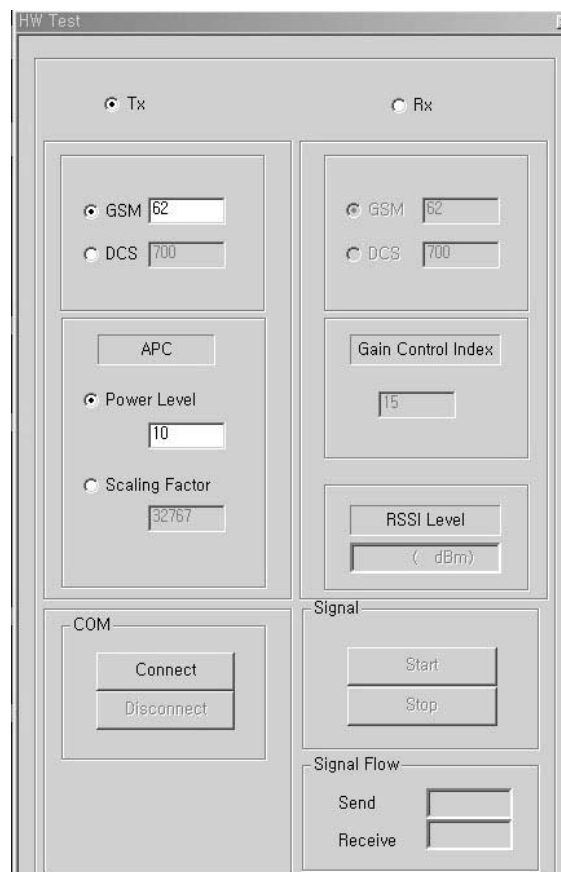


Figure 11-1. HW test program

## 11. STAND ALONE TEST

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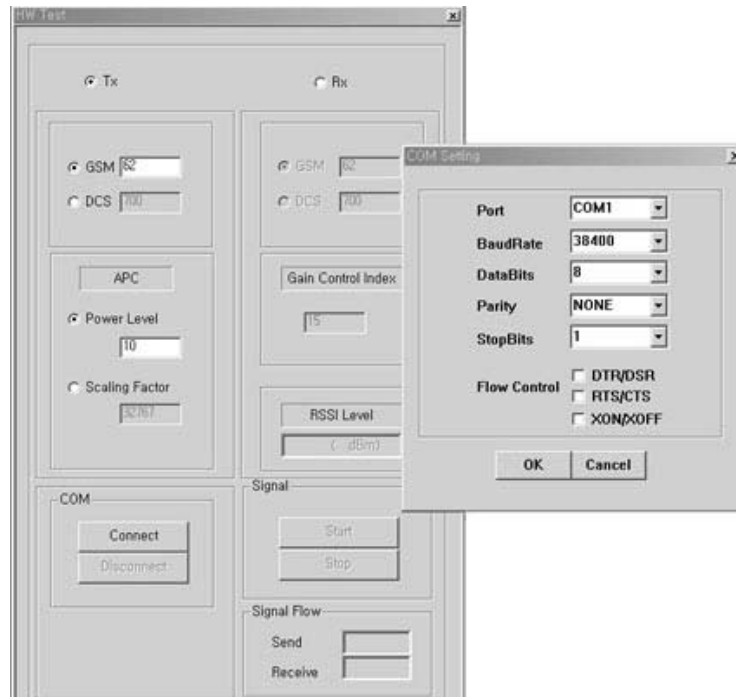


Figure 11-2. HW test setting

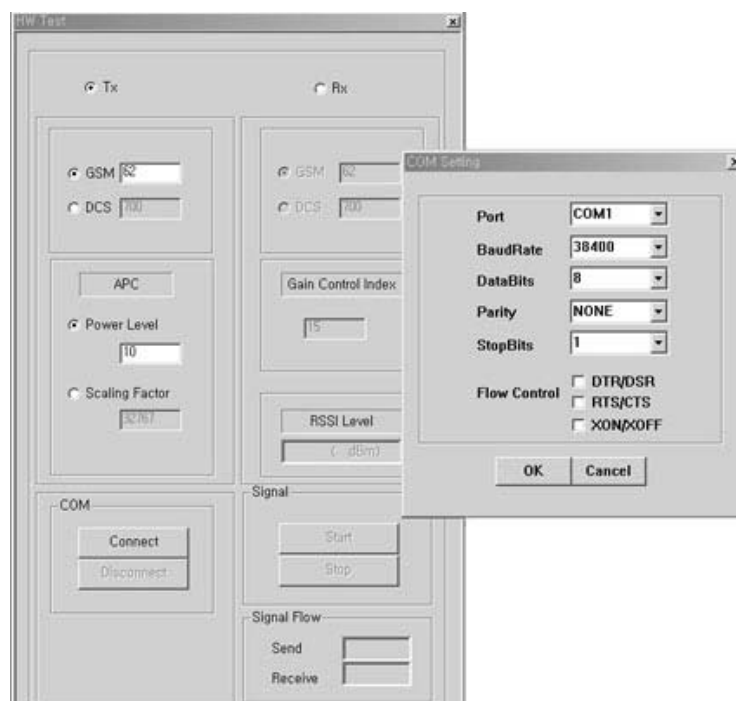


Figure 11-3. Ramping profile

## 12. AUTO CALIBRATION

### 12.1 Overview

Autocal (Auto Calibration) is the PC side Calibration tool that perform Tx ,Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable power supply). Autocal generate calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

### 12.2 Requirements

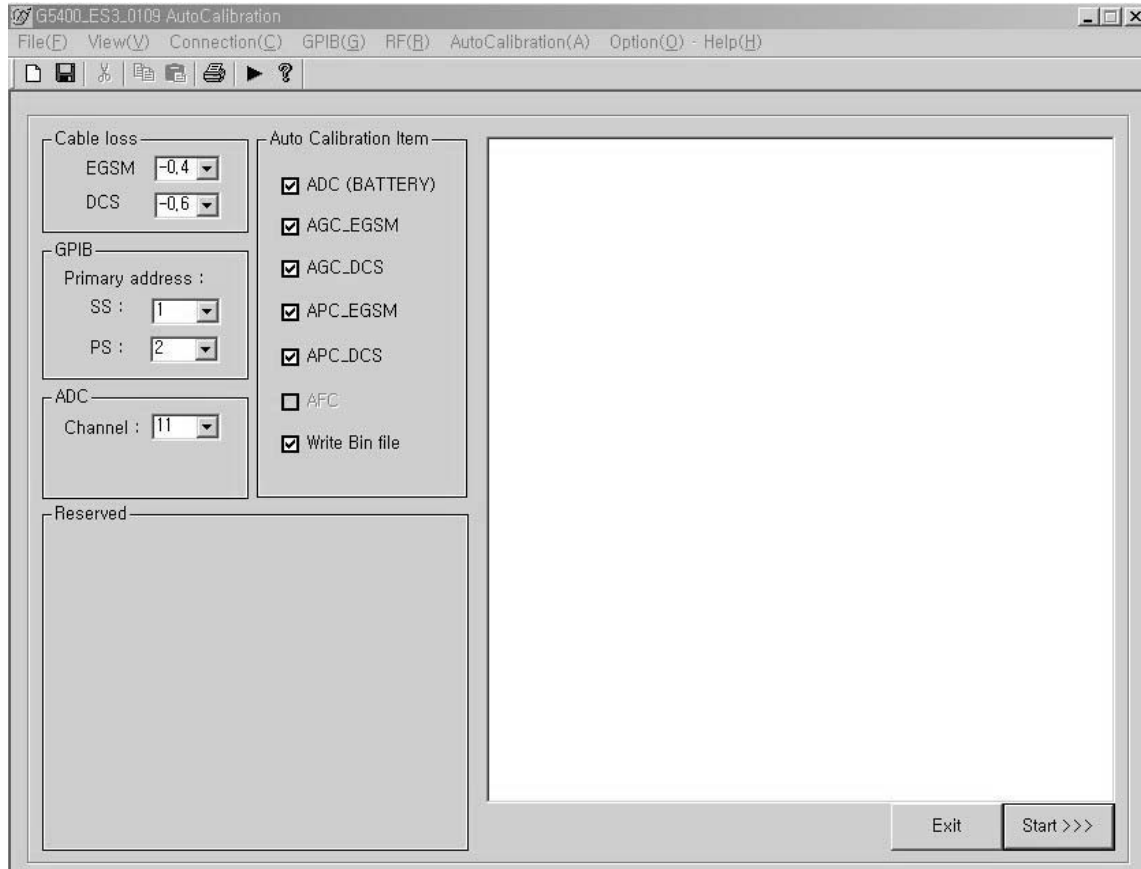
- PC or Notebook installed with Microsoft Windows 98/ME/2000/XP
- Auto Calibration program(Autocal.exe)
- GSM Phone
- LGE PIF JIG, Serial Cable, Data Cable
- Agilent 8960(Call Setting Instrument)
- Tektronix PS2521G(Programmable Power Supply)

### 12.3 Menu and Settings

- File(F) → Clear View**: Clear Calibration Status window texts
- File(F) → Save View**: Save Calibration Status window texts
- File(F) → Save Setting**: Save Current Calibration settings to setting file(\*.cal)
- File(F) → Load Setting**: Load saved Calibration setting
- File(F) → Make BIN ALL**: Make binary file after calibration finished
- File(F) → Make BIN BAT.Cal only**: Make binary file of battery cal data only after calibration finished
- File(F) → Make & Write BIN**: Make binary file after calibration finished then download it to the Flash Memory
- View(V) → Tools**: Enable or disable Tool bar
- View(V) → Status**: Enable or disable status bar
- Connection(C) Connect**: Connect the phone with PC. This procedure checks whether the PC is connected "ag8960" or not. After that it performs sync. procedure with phone. If the sync. procedure is successful state column on status bar changed to SETUP, else you should disconnect phone and try again from the beginning and also check the whole connection. All measurement is performed at state SETUP.
- Connection(C) → Port Setting**: Show COM port setting dialog and Baudrate you can change,etc.
- GPIB(G) → Connect**: Connect the Ag8960 GPIB card with PC.

## 12. AUTO CALIBRATION

---



**Figure 12-1. Auto Calibration Program**

- Screen → **Cable loss**: Enter the RF cable loss GSM and DCS
- Screen → **GPIB(Primary address)**: Enter the SS(Ag8960) and PS(Tektronix PS2521G) GPIB address
- Screen → **ADC Channel**: Default ADC Calibration Channel
- Screen → **Auto Calibration Item**: Default Calibration Settings about Tx, Rx, ADC and write BIN file

### 12.4 AGC

This procedure is for Rx calibration.

In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

### 12.5 APC

This procedure is for Tx calibration.

In this procedure you can get proper scale factor value and measured power level.

### 12.6 ADC

This procedure is for battery calibration.

You can get main Battery Config Table and temperature Config Table

### 12.7 Setting

check com port and cable loss. Select automatic calibration item. If you uncheck one item calibration will stop from the unchecked item. This is useful when you want to process only one item.

### 12.8 How to do calibration

- A. Connect cable between phone and serial port of PC.
- B. Connect Ag8960 equipment and Power Supply and phone.
- C. Set correct port and baud rate.
- D. Press Start button. AutoCal process all calibration procedure
  - i. AGC EGSM
  - ii. AGC DCS
  - iii. APC EGSM
  - iv. APC DCS
  - v. ADC
- E. After finished all measurement. The state is return to SETUP.
- F. The Cal file will be generated and then the calibration data will be written into phone and then will be reset.

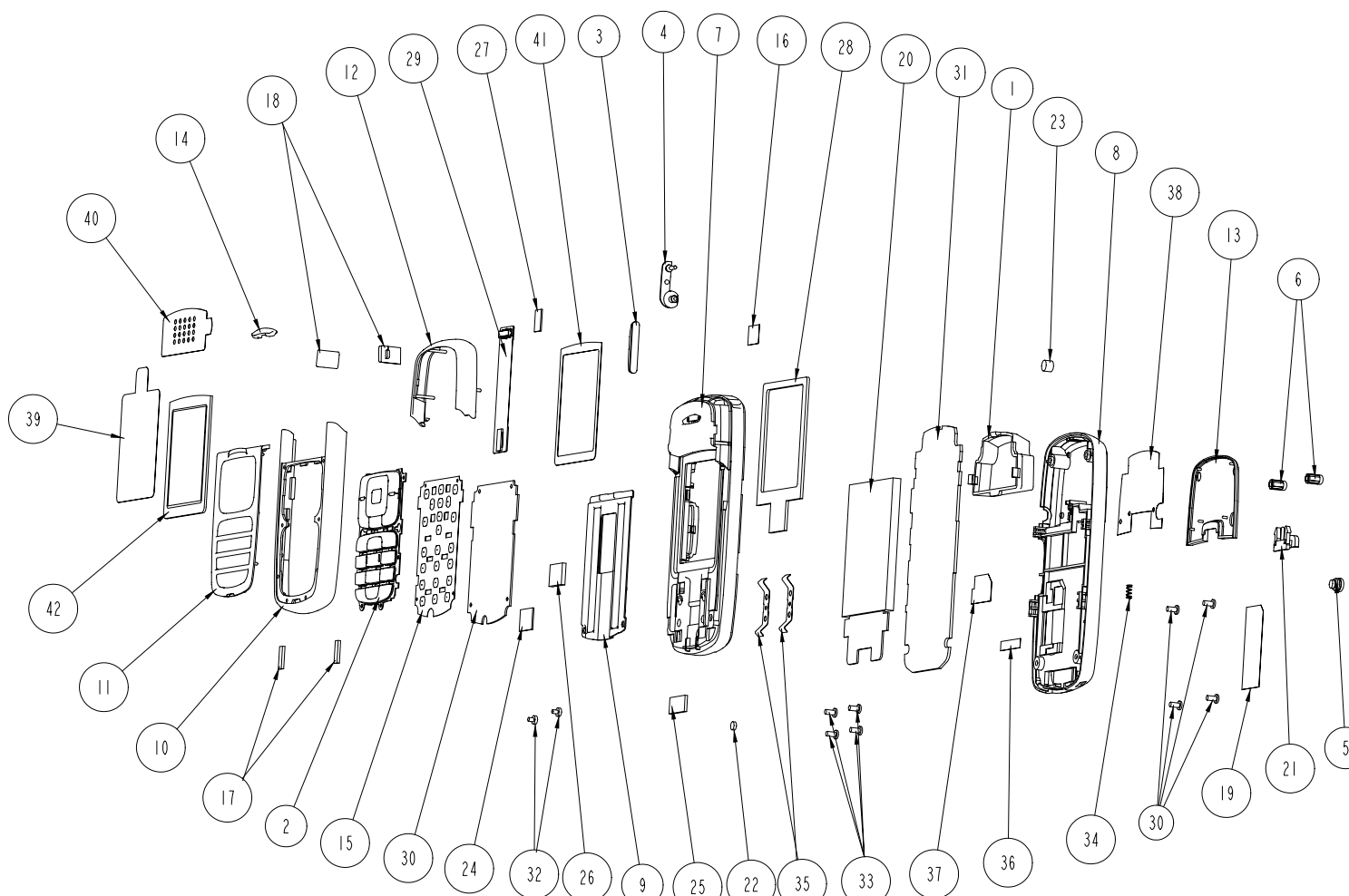


**Note.**

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13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 Exploded View



The diagram illustrates the exploded view of a mobile phone, showing its various components and their assembly relationships. The components are numbered 1 through 42, corresponding to the parts listed in the table. The main body of the phone is shown in the center, with the front cover (7) and rear cover (8) surrounding it. The keypad area (10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42) is shown on the left, and the internal components (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42) are shown on the right. The diagram also shows the internal components (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42) and the external components (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42).

NO	PART_NAME	PART_NO	Q'TY	TYPE
1	ANTENNA,GSM, FIXED	SNGF0004201	1	
2	BUTTON ASSY	ABGZ0001401	1	
3	BUTTON,SIDE	MBJL0012101	1	
4	CAP,EARPHONE JACK	MCCC0014701	1	
5	CAP,MOBILE SWITCH	MCCF0014701	1	
6	CAP,SCREW	MCCH0025001	2	
7	COVER,FRONT	MCJK0024401	1	
8	COVER,REAR	MCJN0021501	1	
9	COVER,SLIDE(LOWER)	MCJV0000301	1	
10	COVER,SLIDE(UPPER)	MCJW0000701	1	
11	DECO	MDAY0007201	1	
12	DECO,FRONT	MDAG0006201	1	
13	DECO,REAR	MDAK0002601	1	
14	DECO,RECEIVER	MDAH0006701	1	
15	DOME ASSY,METAL	ADCA0018701	1	
16	FILTER,RECEIVER	MFBB0003401	1	
17	GASKET,SHIELD FORM	MGAD0050001	2	
18	INDICATOR,LED	MIAA0010801	2	
19	LABEL,MODEL	MLAK0006901	1	
20	LCD MODULE	SVLM0006401	1	
21	LOCKER,BATTERY	MLEA0016301	1	
22	MAGNET,SWITCH	MMAA0003001	1	
23	PAD	MPBZ0032701	1	
24	PAD	MPBZ0034001	1	
25	PAD	MPBZ0054001	1	
26	PAD,FLEXIBLE PCB	MPBF0003701	1	
27	PAD,FLEXIBLE PCB	MPBF0006301	1	
28	PAD,LCD	MPBG0021001	1	
29	PCB ASSY,FLEXIBLE	SACY0019401	1	
30	PCB ASSY,KEYPAD	SAEY0031101	1	
31	PCB ASSY,MAIN	SAFY0098201	1	
32	SCREW MACHINE	GMZZ0011201	2	
33	SCREW MACHINE	GMZZ0011601	8	
34	SPRING,LOCKER	MSDC0001301	1	
35	SPRING,PLATE	MSDD0003401	2	
36	TAPE	MTAZ0030301	1	
37	TAPE	MTAZ0030302	1	
38	TAPE,DECO	MTAA0047501	1	
39	TAPE,PROTECTION	MTAB0024201	1	
40	TAPE,PROTECTION	MTAB0032101	1	
41	TAPE,WINDOW	MTAD0022001	1	
42	WINDOW,LCD	MWAC0036201	1	

**Note.**

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## 13. EXPLODED VIEW & REPLACEMENT PART LIST

### 13.2 Replacement Parts <Mechanic component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
1		GSM(SLIDE)	TGLL0000401	F7100	Silver	
3	MLAZ00	LABEL	MLAZ0033601	IMEI Label,English		
3	MMBB00	MANUAL,OPERATION	MMBB0125701	F7100 User's manual for U.A.E		
2	APEY00	PHONE	APEY0143601	F7100	Silver	
3	ACGM00	COVER ASSY,REAR	ACGM0031901		Silver	
4	MCJN00	COVER,REAR	MCJN0021501		Silver	8
4	MDAK00	DECO,REAR	MDAK0002601		Silver	13
4	MLEA00	LOCKER,BATTERY	MLEA0016301		Silver	21
4	MPBZ00	PAD	MPBZ0032701	G5500 EUASV	Black	23
4	MSDC00	SPRING,LOCKER	MSDC0001301	LG-510,511,512,common use,CONE TYPE, L=5mm	Silver White	34
4	MTAA00	TAPE,DECO	MTAA0047501			38
4	MTAZ00	TAPE	MTAZ0030301		Blue	36
4	MTAZ01	TAPE	MTAZ0030302		Blue	37
3	ACGQ00	COVER ASSY,SLIDE	ACGQ0001501		Silver	
4	ABGZ00	BUTTON ASSY	ABGZ0001401		Silver	2
4	ACGK00	COVER ASSY,FRONT	ACGK0033501		Silver	
5	MBJL00	BUTTON,SIDE	MBJL0012101		Silver	3
5	MCCC00	CAP,EARPHONE JACK	MCCC0014701		Silver	4
5	MCJK00	COVER,FRONT	MCJK0024401		Silver	7
5	MDAG00	DECO,FRONT	MDAG0006201		Silver	12
5	MDAH00	DECO,RECEIVER	MDAH0006701		Silver	14
5	MFBB00	FILTER,RECEIVER	MFBB0003401	G5500 EUASV	Black	16
5	MIAA00	INDICATOR,LED	MIAA0010801		Milk	18
5	MMAA00	MAGNET,SWITCH	MMAA0003001		Silver	22
5	MPBG00	PAD,LCD	MPBG0021001		Black	28
5	MPBZ00	PAD	MPBZ0054001		Black	25
5	MTAB00	TAPE,PROTECTION	MTAB0032101			40
5	MTAD00	TAPE,WINDOW	MTAD0022001			41
4	ACGR00	COVER ASSY, SLIDE(LOWER)	ACGR0000301	G5500 EUASV (SILVER)	Silver	
5	MCJV00	COVER,SLIDE(LOWER)	MCJV0000301	G5500 EUASV (SILVER)	Silver	9
5	MPBF00	PAD,FLEXIBLE PCB	MPBF0003701	G5500 EUASV	Black	26
5	MPBZ00	PAD	MPBZ0034001	G5500, ATTACHED (SLIDE LOWER)	Black	24
4	ACGS00	COVER ASSY, SLIDE(UPPER)	ACGS0000601		Silver	
5	MCJW00	COVER,SLIDE(UPPER)	MCJW0000701		Silver	10

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	MDAY00	DECO	MDAY0007201		Silver	11
5	MGAD00	GASKET,SHIELD FORM	MGAD0050001		Gold	17
4	ADCA00	DOME ASSY,METAL	ADCA0018701		Silver	15
4	GMZZ00	SCREW MACHINE	GMZZ0011201	1.4 mm,2.0 mm,MSWR3(FNM) ,N ,STR , - , G5500 EUASV		32
4	GMZZ01	SCREW MACHINE	GMZZ0011601	1.7 mm,3.0 mm,MSWR3(FN) ,N ,STR , - ,	Silver	
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0006301		Black	27
4	MSDD00	SPRING,PLATE	MSDD0003401	G5500 EUASV	Black	35
3	GMZZ00	SCREW MACHINE	GMZZ0011601	1.7 mm,3.0 mm,MSWR3(FN) ,N ,STR , - ,	Silver	33
3	MCCF00	CAP,MOBILE SWITCH	MCCF0014701		Silver	5
3	MCCH00	CAP,SCREW	MCCH0025001		Silver	6
3	MLAK00	LABEL,MODEL	MLAK0006901			19
3	MTAB00	TAPE,PROTECTION	MTAB0024201	G5500 EUASV		39
3	MWAC00	WINDOW,LCD	MWAC0036201		Silver	42

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

### 13.2 Replacement Parts <Main component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
4	SACY00	PCB ASSY,FLEXIBLE	SACY0019401	F7100 MAIN TO KEYPAD FPCB		29
5	SACA00	PCB ASSY,FLEXIBLE,AUTO	SACA0001001			
6	CN101	CONNECTOR,BOARD TO BOARD	ENBY0010901	30 PIN,0.5 mm,STRAIGHT , ,B to B CNT (HEAER)		
6	CN102	CONNECTOR,BOARD TO BOARD	ENBY0014502	30 PIN,0.4 mm,ETC ,AU ,		
6	SPCY	PCB,FLEXIBLE	SPCY0028301	POLYI , mm,DOUBLE ,		
4	SAEY00	PCB ASSY,KEYPAD	SAEY0031101	F7100 KEYPAD		30
5	SAEA00	PCB ASSY,KEYPAD,AUTO	SAEA0012501	F7100 PCB ASSY,KEYPAD,AUTO		
6	C600	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C601	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C602	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C604	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C608	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
6	C609	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
6	CN600	CONNECTOR,BOARD TO BOARD	ENBY0014504	30 PIN,0.4 mm,ETC ,AU ,T:1.0MM		
6	LD600	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD601	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD602	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD603	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD604	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD605	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD606	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD607	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD608	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	LD609	DIODE,LED,CHIP	EDLH0004502	BLUE ,1608 ,R/TP ,0.35T		
6	R600	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R601	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R602	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R603	RES,CHIP	ERHY0000246	2K ohm,1/16W,J,1005,R/TP		
6	R604	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R605	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R606	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R607	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R608	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R609	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R610	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R611	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R612	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R613	RES,CHIP	ERHY0000207	20 ohm,1/16W,J,1005,R/TP		
6	R614	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R615	RES,CHIP	ERHY0000251	3.6K ohm,1/16W,J,1005,R/TP		
6	R616	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R617	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R618	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R619	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
6	R620	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R621	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R622	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	R623	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
6	SPEY	PCB,KEYPAD	SPEY0021101	FR-4 , mm,MULTI-4 ,		
6	U600	IC	EUSY0129502	LEADLESS CHIP ,6 PIN,R/TP ,HALL-EFFECT SWITCH IC / 2.0*3.0*0.8		
6	VA600	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
6	VA601	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
4	SJMY00	VIBRATOR,MOTOR	SJMY0006102	3 V ,.9 A,12*18 ,G1500 PORON 0.5MM, CONNECTOR TYPE		
4	SUMY00	MICROPHONE	SUMY0003802	FPCB ,-42 dB,4*1.5 ,		
4	SUSY00	SPEAKER	SUSY0006208	PIN ,8 ohm,92 dB,17 mm,PIN TYPE		
3	SAFY00	PCB ASSY,MAIN	SAFY0098201	F7100 EUA, GPRS		31
4	MLAB	LABEL,A/S	MLAB0000601	HUMIDITY STICKER		
4	MLAC00	LABEL,BARCODE	MLAC0003301	EZ LOOKS(use for PCB ASSY MAIN(hardware))		
4	SAFA00	PCB ASSY,MAIN,AUTO	SAFA0034501	F7100 EUA, MAIN AUTO,GPRS Phone		
5	BAT1	CONN,JACK/PLUG, EARPHONE	ENJE0003001	2 ,2 PIN,W3000 Back Up Battery Holder		
5	C101	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C102	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C103	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C104	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C105	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C106	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C107	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C108	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
5	C111	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C112	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C113	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C114	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C115	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C116	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C117	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C120	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C121	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C122	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C123	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C124	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C125	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C126	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C129	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C130	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C133	CAP,CERAMIC,CHIP	ECCH0001811	220000 pF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
5	C134	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C135	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C137	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C180	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L _ESR ,1608 ,R/TP		
5	C201	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C202	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C203	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C204	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C205	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C206	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C207	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C208	CAP,CERAMIC,CHIP	ECCH0000280	0.22 uF,10V ,K ,X7R ,HD ,1608 ,R/TP		
5	C209	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C210	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C211	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C212	CAP,CERAMIC,CHIP	ECCH0000280	0.22 uF,10V ,K ,X7R ,HD ,1608 ,R/TP		
5	C213	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C214	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C215	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C216	CAP,CERAMIC,CHIP	ECCH0000138	390 pF,50V,K,X7R,HD,1005,R/TP		
5	C217	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C218	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C219	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C220	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		



### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C221	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C222	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C223	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C224	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C225	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C226	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C227	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C228	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C229	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C230	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C231	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C232	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C233	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C234	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C235	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C236	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C237	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C238	CAP,TANTAL,CHIP	ECTH0001701	10 uF,6.3V ,M ,L ,ESR ,2012 ,R/TP		
5	C239	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C240	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C250	CAP,TANTAL,CHIP,MAKER	ECTZ0000318	33 uF,10V ,M ,L ,ESR ,ETC ,R/TP		
5	C251	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L ,ESR ,1608 ,R/TP		
5	C252	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C253	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L ,ESR ,1608 ,R/TP		
5	C254	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
5	C255	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
5	C304	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C305	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C306	CAP,CERAMIC,CHIP	ECCH0000276	1 uF,10V,Z,Y5V,HD,1608,R/TP		
5	C307	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C308	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C309	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C310	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C311	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C312	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C313	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C314	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C315	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C316	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C317	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C318	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C319	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C320	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C321	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C322	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C323	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C324	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C325	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C326	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C327	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C328	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C329	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C330	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C331	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C332	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C333	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C334	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C335	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C336	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C337	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C338	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C339	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C340	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C341	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C342	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C343	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C344	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C345	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C346	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C347	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C348	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C349	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C350	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C351	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C352	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C353	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C354	CAP,CERAMIC,CHIP	ECCH0004903	1 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
5	C355	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C356	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C357	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C358	CAP,TANTAL,CHIP	ECTH0001901	10 uF,6.3V ,M ,L ,ESR ,1608 ,R/TP		
5	C359	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C360	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C370	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C371	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C372	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
5	C401	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C403	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
5	C404	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
5	C405	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
5	C406	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C407	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C408	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C409	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C410	CAP,CERAMIC,CHIP	ECCH0000186	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
5	C411	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C412	CAP,CERAMIC,CHIP	ECCH0000101	0.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C414	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
5	C415	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
5	C416	CAP,CERAMIC,CHIP	ECCH0000174	2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C417	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C418	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C419	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C420	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
5	C421	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C422	CAP,CERAMIC,CHIP	ECCH0000174	2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C423	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C424	CAP,CERAMIC,CHIP	ECCH0000174	2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
5	C425	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C426	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C427	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
5	C428	CAP,CERAMIC,CHIP	ECCH0000103	1.5 pF,50V,C,NP0,TC,1005,R/TP		
5	C429	CAP,CERAMIC,CHIP	ECCH0000159	22 nF,16V,K,X7R,HD,1005,R/TP		
5	C430	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
5	C431	CAP,CERAMIC,CHIP	ECCH0000128	100 pF,50V,J,NP0,TC,1005,R/TP		
5	C433	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
5	C434	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	C436	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
5	C437	CAP,CERAMIC,CHIP	ECCH0005801	2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
5	C438	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
5	C450	CAP,TANTAL,CHIP,MAKER	ECTZ0000318	33 uF,10V ,M ,L_ESR ,ETC ,R/TP		
5	C456	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C457	CAP,CERAMIC,CHIP	ECCH0003401	10 uF,6.3V ,Z ,Y5V ,HD ,2012 ,R/TP		
5	C460	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	CN104	CONNECTOR,BOARD TO BOARD	ENBY0001802	2 PIN,1.27 mm,STRAIGHT ,SILVER ,		
5	CN302	CONNECTOR,BOARD TO BOARD	ENBY0011001	30 PIN,0.5 mm,STRAIGHT , ,B to B CNT (SOCKET)		
5	CN303	CONNECTOR,BOARD TO BOARD	ENBY0011002	26 PIN,0.5 mm,ETC ,AU ,G5500		
5	CN310	CONNECTOR,I/O	ENRY0000901	24 PIN,0.5 mm,ETC , ,		
5	D101	DIODE,SWITCHING	EDSY0005701	EMT3 ,80 V,4 A,R/TP ,		
5	D201	DIODE,SWITCHING	EDSY0012101	US-FLAT ,30 V,1 A,R/TP ,2.5*1.25*0.6(t)		
5	FL401	FILTER,SEPERATOR	SFAY0003702	900 ,1800 ,1.3 dB,1.5 dB,30 dB,25 dB,4532 ,Antenna switch		
5	FL402	FILTER,SAW	SFSY0021301	942.5 MHz,2.0*1.4*0.68 ,SMD ,		
5	FL403	FILTER,SAW	SFSY0021302	1842.5 MHz,2.0*1.4*0.68 ,SMD ,		
5	J100	CONN,SOCKET	ENSY0007608	6 PIN,ETC ,BRIDGE NON PROTECTOR TYPE ,2.54 mm,2.7T		
5	J201	CONN,JACK/PLUG, EARPHONE	ENJE0002301	3,5 PIN,G7000 EAR JACK 3 pole, 5 pin KSD		
5	L101	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
5	L401	INDUCTOR,CHIP	ELCH0001420	3.9 nH,S ,1005 ,R/TP ,CDMA		
5	L402	INDUCTOR,CHIP	ELCH0005013	4.7 nH,S ,1005 ,R/TP ,		
5	L403	INDUCTOR,CHIP	ELCH0001413	22 nH,J ,1005 ,R/TP ,CDMA		
5	L404	INDUCTOR,CHIP	ELCH0003805	6.8 nH,C ,1608 ,R/TP ,COIL TYPE		
5	LED301	DIODE,LED,CHIP	EDLH0003401	RED, GREEN ,ETC ,R/TP ,SIZE 1315 , GSM DUAL LED		
5	LED302	DIODE,LED,CHIP	EDLH0003401	RED, GREEN ,ETC ,R/TP ,SIZE 1315 , GSM DUAL LED		
5	Q201	TR,FET,P-CHANNEL	EQFP0004201	2.9*1.9*0.8(t) ,0.7 W,20 V,-6.0 A,R/TP ,NDC652P upgrade(substitution) item		
5	Q202	TR,BJT,NPN	EQBN0004801	SMT6 ,0.2 W,R/TP ,		
5	Q301	TR,BJT,NPN	EQBN0004801	SMT6 ,0.2 W,R/TP ,		
5	Q302	IC	EUSY0077301	SC70-6/SOT23-6 ,6 PIN,R/TP ,		
5	Q303	TR,BJT,NPN	EQBN0004801	SMT6 ,0.2 W,R/TP ,		
5	Q304	IC	EUSY0077301	SC70-6/SOT23-6 ,6 PIN,R/TP ,		
5	R101	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R102	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R103	RES,CHIP	ERHY0000282	120K ohm,1/16W,J,1005,R/TP		
5	R104	RES,CHIP	ERHY0000512	10M ohm,1/16W,J,1608,R/TP		
5	R105	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R106	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
5	R107	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R108	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
5	R109	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R111	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R114	RES,CHIP	ERHY0000287	220K ohm,1/16W,J,1005,R/TP		
5	R115	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R116	RES,CHIP	ERHY0000287	220K ohm,1/16W,J,1005,R/TP		
5	R117	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
5	R118	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R119	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R120	RES,CHIP	ERHY0000237	680 ohm,1/16W,J,1005,R/TP		
5	R201	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R202	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R203	RES,CHIP	ERHY0001103	0.33 ohm,1/4W ,F ,2012 ,R/TP		
5	R204	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R205	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R206	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R208	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R209	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R211	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R212	RES,CHIP	ERHY0000138	33K ohm,1/16W,F,1005,R/TP		
5	R213	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
5	R214	RES,CHIP	ERHY0000291	330K ohm,1/16W,J,1005,R/TP		
5	R215	RES,CHIP	ERHY0000204	12 ohm,1/16W,J,1005,R/TP		
5	R216	RES,CHIP	ERHY0000204	12 ohm,1/16W,J,1005,R/TP		
5	R217	RES,CHIP	ERHY0000280	100K ohm,1/16W,J,1005,R/TP		
5	R218	RES,CHIP	ERHY0000247	2.2K ohm,1/16W,J,1005,R/TP		
5	R219	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
5	R220	RES,CHIP	ERHY0006602	620 Kohm,1/16W ,J ,1005 ,R/TP		
5	R221	RES,CHIP	ERHY0000250	3.3K ohm,1/16W,J,1005,R/TP		
5	R222	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
5	R223	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
5	R224	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R226	RES,CHIP	ERHY0000202	4.7 ohm,1/16W,J,1005,R/TP		
5	R227	RES,CHIP	ERHY0000296	1M ohm,1/16W,J,1005,R/TP		
5	R228	RES,CHIP	ERHY0000250	3.3K ohm,1/16W,J,1005,R/TP		
5	R229	RES,CHIP	ERHY0000265	20K ohm,1/16W,J,1005,R/TP		
5	R230	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R341	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R342	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R343	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R344	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R345	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R346	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R347	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R348	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R349	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R350	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R351	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R352	RES,CHIP	ERHY0000228	270 ohm,1/16W,J,1005,R/TP		
5	R353	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R354	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R355	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R361	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R363	RES,CHIP	ERHY0000112	1K ohm,1/16W,F,1005,R/TP		
5	R364	RES,CHIP	ERHY0000112	1K ohm,1/16W,F,1005,R/TP		
5	R365	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R370	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R371	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R372	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R373	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R374	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R401	CAP,CERAMIC,CHIP	ECCH0000106	5 pF,50V,C,NP0,TC,1005,R/TP		
5	R402	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R403	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R404	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R405	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R406	RES,CHIP	ERHY0004301	130 ohm,1/16W ,J ,1005 ,R/TP		
5	R407	RES,CHIP	ERHY0004301	130 ohm,1/16W ,J ,1005 ,R/TP		
5	R408	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R409	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R412	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R413	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R414	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
5	R489	RES,CHIP	ERHY0000257	6.8K ohm,1/16W,J,1005,R/TP		
5	R499	THERMISTOR	SETY0001201	NTC ,22 Kohm,SMD ,1.0*0.5 / NSM4 SERIES		
5	R500	RES,CHIP	ERHY0000189	3.9 Kohm,1/16W ,F ,1005 ,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	R341	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R342	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R343	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R344	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R345	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R346	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R347	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R348	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R349	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R350	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R351	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R352	RES,CHIP	ERHY0000228	270 ohm,1/16W,J,1005,R/TP		
5	R353	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R354	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R355	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R361	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R363	RES,CHIP	ERHY0000112	1K ohm,1/16W,F,1005,R/TP		
5	R364	RES,CHIP	ERHY0000112	1K ohm,1/16W,F,1005,R/TP		
5	R365	RES,CHIP	ERHY0000241	1K ohm,1/16W,J,1005,R/TP		
5	R370	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R371	RES,CHIP	ERHY0000261	10K ohm,1/16W,J,1005,R/TP		
5	R372	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
5	R373	RES,CHIP	ERHY0000273	47K ohm,1/16W,J,1005,R/TP		
5	R374	RES,CHIP	ERHY0000201	0 ohm,1/16W,J,1005,R/TP		
5	R401	CAP,CERAMIC,CHIP	ECCH0000106	5 pF,50V,C,NP0,TC,1005,R/TP		
5	R402	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R403	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R404	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R405	RES,CHIP	ERHY0000213	47 ohm,1/16W,J,1005,R/TP		
5	R406	RES,CHIP	ERHY0004301	130 ohm,1/16W ,J , 1005 ,R/TP		
5	R407	RES,CHIP	ERHY0004301	130 ohm,1/16W ,J , 1005 ,R/TP		
5	R408	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R409	RES,CHIP	ERHY0000223	150 ohm,1/16W,J,1005,R/TP		
5	R412	RES,CHIP	ERHY0000220	100 ohm,1/16W,J,1005,R/TP		
5	R413	RES,CHIP	ERHY0000263	15K ohm,1/16W,J,1005,R/TP		
5	R414	RES,CHIP	ERHY0000125	10K ohm,1/16W,F,1005,R/TP		
5	R489	RES,CHIP	ERHY0000257	6.8K ohm,1/16W,J,1005,R/TP		
5	R499	THERMISTOR	SETY0001201	NTC ,22 Kohm,SMD ,1.0*0.5 / NSM4 SERIES		
5	R500	RES,CHIP	ERHY0000189	3.9 Kohm,1/16W ,F ,1005 ,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	SPFY	PCB,MAIN	SPFY0068901	FR-4 ,1 mm,MULTI-8 ,		
5	SW101	SWITCH,TACT	ESCY0002501	12 V,0.05 A,HORIZONTAL ,220 G,G5200 TACK S/W		
5	SW102	SWITCH,TACT	ESCY0002501	12 V,0.05 A,HORIZONTAL ,220 G,G5200 TACK S/W		
5	SW401	CONN,RF SWITCH	ENWY0003001	STRAIGHT ,SMD ,0.6 dB,3.8X3.0X3.6T		
5	U101	IC	EUSY0157001	LFBGA ,160 PIN,R/TP ,DIGITAL BASEBAND PROCESSOR		
5	U102	IC	EUSY0100701	64 BALL LFBGA / MINI-BGA ,64 PIN,R/TP ,DUAL-MODE VOICEBAND BASEBAND CODEC / AD20MSP430		
5	U103	IC	EUSY0160401	SOT-23 ,3 PIN,R/TP ,DC MOTOR DRIVER / INTEGRATED RELAY		
5	U201	IC	EUSY0145401	P-FBGA73 ,73 PIN,R/TP ,128M FLASH 32M PSRAM / BOTTOM BOOT / CE 2 PCS		
5	U202	IC	EUSY0145101	LFCSP-32 (5mmX5mm) ,32 PIN,R/TP ,2.8V LDO for Memory / GSM POWER MANAGEMENT SYSTEM		
5	U203	IC	EUSY0119001	10 uMAX ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES		
5	U204	IC	EUSY0111601	32-PIN QFN ,32 PIN,R/TP ,MA-3 / 40 TONES / FM + WAVEFORM TABLE		
5	U205	IC	EUSY0077701	SC70-5 ,5 PIN,R/TP ,		
5	U206	IC	EUSY0122501	LLP-6 ,6 PIN,R/TP ,300mA CMOS LDO / 3.3V		
5	U207	IC	EUSY0077701	SC70-5 ,5 PIN,R/TP ,		
5	U208	IC	EUSY0204801	SC82-AB (SC70-4) ,4 PIN,R/TP ,80mA CMOS LOW IQ LDO VOLTAGE REGULATOR / 2.5V		
5	U304	IC	EUSY0171101	SMD ,6 PIN,R/TP ,MAGNETO-IMPEDANCE SENSORS / USE FOR COMPASS		
5	U401	PAM	SMPY0004001	35 dBm,55 % ,2 A,-50 dBc,25 dB,10.0 * 7.0 * 1.4 ,SMD ,		
5	U402	IC	EUSY0161301	8x8 LGA ,28 PIN,R/TP ,		
5	U410	IC	EUSY0118602	SOT-23-5 ,5 PIN,R/TP ,150mA LOW NOISE uCAP CMOS LDO		
5	VA201	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA202	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA203	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA204	VARISTOR	SEVY0000702	14 V,10% ,SMD ,		
5	VA301	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA302	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA303	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA304	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA305	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA306	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA307	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA308	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA309	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA310	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA311	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		



### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	VA312	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VA313	RES,VARIABLE,ETC	ERVZ0000101	ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR		
5	VR101	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF 1005 size		
5	VR102	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF 1005 size		
5	VR103	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF 1005 size		
5	VR104	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF 1005 size		
5	X101	X-TAL	EXXY0004601	0.32768 MHz,20 PPM,12.5 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
5	X401	VCTCXO	EXSK0004101	13 MHz,3 PPM,10 pF,SMD ,3.2*2.5*1.0 ,		
3	SBCL00	BATTERY,CELL,LITHIUM	SBCL0001302	2 V,1 mAh,COIN ,W3000 Back Up Battery		
3	SNGF00	ANTENNA,GSM,FIXED	SNGF0004201	3.0 ,-2 dBd,WHITE ,GSM+DCS,F7100,INTENNA		1
3	SVLM00	LCD MODULE	SVLM0008001	128 * 160 ,37.2 * 48.9 ,2-Port, 65K CSTN , 28.02*35.028(AA), TM		20

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

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### 13.3 Accessories

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
2	SBPL00	BATTERY PACK,LI-ION	SBPL0072135	3.7 V,820 mAh,1 CELL,PRISMATIC ,F7100 BATTERY(SV)	Silver	
2	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003901	,		
2	SSAD00	ADAPTOR,AC-DC	SSAD0007828	100-240V ,60 Hz,5.2 V,800 mA,CE,CB,GOST ,EU PLUG(24P),STD		